Ultimate Ownership Structure and Bank Regulatory Capital Adjustment: Evidence from European Commercial Banks

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Abstract

This paper empirically investigates whether a bank's decision to adjust its capital is influenced by the existence of a divergence between the voting and the cash-flow rights of its ultimate owner. We use a novel hand-collected dataset on detailed control and ownership characteristics of 405 European commercial banks to estimate an ownership-augmented capital adjustment model over the 2003-2010 period. We find no differences in adjustment speeds when banks need to adjust their Tier 1 capital downwards to reach their target capital ratio. However, when the adjustment process requires an upward shift in Tier 1 capital, the adjustment is significantly slower for banks controlled by a shareholder with a divergence between voting and cash-flow rights. Further investigation shows that such an asymmetry only holds if the ultimate owner is a family or a state or if the bank is headquartered in a country with relatively weak shareholder protection. Moreover, this behavior is tempered during the 2008 financial crisis, possibly because of government capital injections or support from ultimate owners (propping up). Our findings provide new insights for understanding capital adjustment in general and have policy implications on the road to the final stage of Basel III in 2019.

JEL Classification: G21, G28, G32

Keywords: Ownership structure, pyramids, regulatory bank capital, European banking, adjustment speed, voting rights, cash-flow rights

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1. Introduction

Unlike non-financial firms banks are highly leveraged and have to comply with minimum capital requirements which have been further tightened after the 2008 financial crisis. The Basel Committee on Banking Supervision (BIS, 2010) has implemented new rules not only to strengthen the existing capital requirements but also to improve the quality of regulatory capital by excluding preferred shares (which in general do not carry voting rights) from the new definition called Core Tier 1 capital. It has been argued that such requirements would entail high costs for banks and jeopardize their lending activities and overall contribution to the real economy. Such costs involve not only the well-known equity issuance costs including both transaction and asymmetric information costs[1] but also relate to control dilution costs[2].

The purpose of this paper is to empirically investigate whether, in adjusting their capital structure (debt/equity), firms in general and banks more specifically take control dilution costs into consideration, beyond the asymmetric information and transaction costs considered in prior research on capital structure. We capture the extent of control dilution costs by the divergence between the voting and the cash-flow rights of ultimate owners, often named wedge. A divergence between both types of rights is known to affect the firm's performance ((Claessens et al. 2002), (Bertrand et al. 2002), (Joh 2003), (Bertrand et al. 2008), (Azofra and Santamaria 2011)) and the incentives of the controlling shareholder to preserve her/his voting power (Bebchuk et al. 2000), possibly impacting the costs and benefits of adjusting capital structure. In our framework, we investigate whether the adjustment speed is influenced by the presence of a divergence between the voting and cash-flow rights of the ultimate owner. We build on the law and finance literature (La Porta et al. 1998) which predicts that the fear of control dilution is higher in firms controlled through a divergence between both types of rights. In the adjustment process, we look into both positive and negative equity changes to capture possible asymmetries in the speed of adjustment for banks with and without a

[1] Issuing new equity in the context of asymmetric information signals bad news to the market (Myers and Majluf 1984), possibly affecting the firm's economic value negatively. Altinkihc and Hansen (2000) also report higher transaction costs for equity issuance compared to debt finance. For these reasons, firms change their capital structure in a predetermined pecking order: they first rely on internal funds; if this is insufficient they use debt finance and raise equity in last resort.

[2] Some studies argue that firm managers/controlling shareholders are inclined to adapt their financing policies to inflate their voting power and avoid the dilution of their control rights ((Stulz 1988), (Harris and Raviv 1988)). Focusing on banking firms, Hyun and Rhee (2011) theoretically show that to raise their capital ratios, banks are likely to reduce loans in order to avoid ownership dilution of the existing shareholders. In a commentary on the 2008 financial crisis, Onado (2008) argues that the reluctance of banks to recapitalize is not only due to the cost of issuing equity but also to the fact that it could significantly dilute the ownership of existing shareholders.

divergence between voting and cash-flow rights. If the only institutions that are found to adjust their equity capital upwards (positive change) slower than downwards (negative change) are those controlled by a shareholder with a divergence between both rights, we would conjecture that such a behavior is driven by the fear of control dilution. Accordingly we would conclude that control dilution costs do matter in the adjustment process. We consider this issue to be particularly relevant for banks compared to other firms because of the special role they play in pyramidal ownership structures involving banks and other non-financial firms. Banks with a wedge (i.e. controlled by an owner with a larger amount of voting rights than cash-flow rights) might serve as capital suppliers of the related-firms where the controlling ultimate owner has substantial financial benefits (i.e. high level of cash-flow rights) ((La Porta et al. 2003), (Cull et al. 2011)). For example, such banks might grant loans merely to support (propping up) distressed related-firms with unsecured loans. Because banks are protected by a safety net (deposit insurance system, public support, bail-out policies...), the controlling owner's incentives to expropriate might be stronger, the costs of such a diversion being borne by public authorities (Merton 1977). Even without safety net subsidies, the opaqueness of banks' assets and the complexity of bank activities (Morgan 2002) might encourage such a diversion and facilitate insider expropriation and therefore increase the incentives of ultimate shareholders to protect their controlling position.

To investigate the relevance of control dilution costs in capital adjustment, we build on two strands of the literature: the capital structure adjustment literature and the corporate governance and pyramidal ownership structure literature. The trade-off theory of capital structure states that firms target the level of their leverage (debt to equity) ratio ((Rajan and Zingales 1995), (Hovakimian et al. 2001), (Flannery and Rangan 2006), (Byoun 2008), (Antoniou et al. 2008)). Similarly, focusing on banking firms, prior studies ((Berger et al. 2008), (Flannery and Rangan 2008), (Memmel and Raupach 2010)) argue that bank capital ratios do not fluctuate randomly, as predicted by the pecking order theory of capital structure, and find evidence of the target capital ratio, i.e. the shareholders' value maximizing capital ratio level. Random shocks may affect the firms' optimal leverage leading to either positive or negative deviations of the leverage ratio from the target level. Consequently, firm management is expected to periodically adjust the capital structure. Nevertheless, adjustments toward the target level entail substantial costs due to market frictions, i.e. information asymmetries and transaction costs associated to equity issuance as highlighted by a broad literature on firms' capital structure (leverage) adjustment ((Roberts and Leary 2005), (Flannery and Rangan 2006), (Byoun 2008), (Huang and Ritter 2009), (Faulkender et al. 2012), (Oztekin and Flannery 2012)). These adjustment costs prevent firms from instantaneously reaching the optimal capital structure. In the specific case of banking firms with pervasive capital regulatory constraints, it has been argued that, because of these adjustment costs, banks usually hold capital buffers, i.e. regulatory capital ratios above the minimum requirement ((Berger et al. 2008), (Fonseca and González 2010)) and are likely to adjust their capital ratios by modifying the size of their balance sheets and/or by changing their risk exposure by substituting safe assets to risky assets ((Laderman 1994), (Jacques and Nigro 1997), (Ivashina and Scharfstein 2010)). Adjusting toward optimal capital structure being costly, firms do not only target the appropriate level of their leverage (debt to equity) ratio but also weigh adjustment costs against the costs of operating with a sub-optimal ratio (above or below the target level). The law and finance literature (La Porta et al. 1998), and specifically the conventional view of pyramidal ownership structure, predicts that firms controlled through a divergence between voting and cash-flow rights will attach more importance to adjustment costs than to adjustment benefits. Accordingly, such firms are expected to reach their optimal capital structure less rapidly. First, because a controlling shareholder with a wedge generally holds fewer cash-flow rights in the corresponding firm, she/he might disregard the benefits from adjusting to the optimal capital structure (debt to equity ratio). Second, a shareholder with a wedge is more inclined to reap private benefits of control at the expense of minority shareholders. If control benefits are more valuable for such a shareholder, she/he might be more averse to control dilution. Such a shareholder might therefore avoid financing decisions that can threaten her/his controlling position. Issuing new equity might dilute her/his control while repurchasing equity might enhance it. Meanwhile, it could be argued that the controlling shareholder could provide the required equity her/himself. However, this may increase the proportion of cash-flow rights held in the corresponding firm leading to high expropriation costs ((La Porta et al. 2002), (Maury and Pajuste 2005)). Hence, the main hypothesis we test is that unlike banks without divergence between voting and cash-flow rights, the adjustment process for banks with such a divergence is not only expected to be partial as shown by previous studies but also asymmetric: lower speed if the bank has to adjust its equity capital upwards and higher speed if a downward adjustment is required.

Several factors are likely to affect the incentives of a controlling shareholder to expropriate and therefore to protect her/his controlling position. Families and states control firms through a divergence between voting and cash-flow rights when they expect to divert higher resources (Almeida and Wolfenzon 2006). Hence, family or state-controlled banks might have stronger incentives to avoid financing decisions which could threaten their position. Similarly, expropriation is less costly in countries with weak shareholder protection rights (La Porta et al. 2002). Hence, control benefits might be more valuable in such countries; accordingly, the controlling owner with a wedge is expected to be more reluctant to adjust equity capital upwards in countries with weak shareholder protection. Finally, the 2008 global financial crisis has heavily impacted bank equity positions. If a controlling shareholder with a wedge expects higher earnings in the future, especially from profit diversion, she/he might intervene to support (prop up) the bank to prevent its failure and keep it in business to exploit future opportunities (Friedman et al. 2003). Consequently, the reluctance to increase equity capital should be less apparent for such banks during the 2008 financial crisis.

We extend the capital structure and corporate governance literatures in several directions. First, we compile new data on ultimate owners' voting and cash-flow rights of a set of 405 commercial banks across 17 Western European countries. We build the control chains (pyramids, cross-holdings, multiple holdings) for both publicly listed and privately owned banks for the years 2004, 2006 and 2010 to control for possible changes in ultimate ownership structure. Previous studies have built control chains at a given point in time (one year) to estimate the influence of the ownership structure on bank valuation and bank risk ((Caprio et al. 2007), (Laeven and Levine 2009)). These studies only focus on the largest publicly listed banks. We compute for each bank the ultimate owners' voting and cash-flow rights by following the methodology of the last link principle initially used by (La Porta et al. 1999) and disentangle between controlling shareholders with and without a divergence between both rights (i.e. with and without a wedge). Second, we examine whether such a divergence affects the bank's capital adjustment speed, a question which to our knowledge has not been addressed before. For this purpose, we use a partial capital adjustment model commonly used in the previous literature ((Berger et al. 2008), (Byoun 2008)). Rather than considering leverage (debt/equity) per se, we follow prior work specifically dedicated to banks which focus on a target regulatory capital ratio ((Berger et al. 2008), (Memmel and Raupach 2010)). We alternatively use two ratios as targets: the ratio of Tier 1 regulatory capital to total assets and the ratio of Tier 1 regulatory capital to risk-weighted assets. We model the adjustment process to allow the bank to adjust toward the optimal ratio not only externally (equity issues/repurchases) but also internally (earnings). Our aim is to determine if a divergence between voting and cash-flow rights, capturing the extent of control dilution costs, influences banks' adjustment speed. More specifically, we investigate banks' behavior when they are either below or above the target ratio to capture possible asymmetries in the adjustment process. As argued above, such asymmetries could possibly be the outcome of differences in control/ownership dilution costs captured by the presence or absence of a divergence between the ultimate owner’s voting and cash-flow rights. Hence, we contribute to the capital adjustment literature by considering the impact of control/ownership dilution costs beyond the arguments that are generally put forward (transaction and asymmetric information costs). Third, by focusing on Europe we are able to draw policy implications for bank regulators. Deviation between voting and cash-flow rights is more acute in Europe compared to other countries (for instance the U.S.) with more diffused ownership (La Porta et al. 1998). We hence carry out a study on European banks and provide another driving factor behind the reluctance of banks to raise equity: ownership structure, particularly the divergence between voting and cash-flow rights. Finally, we contribute to the recent regulatory debate regarding the narrower definition of Tier 1 regulatory capital (core Tier 1) which excludes preferred shares and draw potential implications.

Working on a panel of 405 European commercial banks over the 2003-2010 period, our key findings are as follows. Banks that are controlled by a shareholder with equal voting and cash-flow rights (null wedge) adjust their Tier 1 regulatory capital upwards and downwards at the same speed to move closer to the target capital ratio. Furthermore, they do so by equally considering equity issues and repurchases. Such banks do not appear to fear control dilution stemming from equity issuance. However, banks controlled through a divergence between both types of rights adjust their capital at the same speed as banks without such a divergence only when they need to lower their equity capital. Such banks are reluctant to externally adjust their Tier 1 capital upwards and are likely to draw on earnings to reach the target capital ratio when they face a shortage in equity capital. This finding suggests that banks controlled through divergence between both rights fear control dilution and consequently curb recapitalization (equity issuance). A deeper investigation shows that the reluctance to rebalance equity capital upwards is only effective if the controlling shareholder is a family or a state or when the bank is established in a country with weak shareholder protection. Furthermore, such a behavior tends to be less apparent during the 2008 financial crisis possibly due to capital injections or propping up by ultimate owners.

The remainder of the paper proceeds as follows. Section 2 describes the data, defines the ultimate ownership variables and provides some descriptive statistics. In section 3, we specify the capital adjustment model we use to conduct our empirical investigation. Section 4 provides estimation results and section 5 shows robustness checks. Section 6 concludes and provides some policy implications.

2. Data, Ultimate Ownership Variables and Descriptive Statistics

2.1. Sample

Our study focuses on European commercial banks, for which we have extracted financial statement data from BvD BankScope. Our data set covers the 2003-2010 period and includes the following European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. For the time period and countries covered by our study Bankscope reports balance sheets and income statements for 1533 commercial banks. We use unconsolidated data but also refer to consolidated statements when unconsolidated data are not available. By limiting our sample to banks that provide information on the risk-based Tier 1 capital ratio, and after cleaning the data from outliers, we are left with a sample of 417 commercial banks. We further omit 8 banks involved in mergers and acquisitions[3]. To build our control chains and identify bank ultimate owners we need to define control cutoffs which further limit the number of observations. Hence, we delete 28 banks for which we are not able to identify the ultimate owner when we consider a control cutoff of 10% and 4 banks when we raise the cutoff to 20%. We end up with a sample of 381 commercial banks (control cutoff of 10%) and 405[4] commercial banks (control cutoff of 20%). Table 1 provides a breakdown of both samples by country. To gauge the representativeness of our sample, we compare the aggregate total assets of our sample banks in a given country to the aggregate assets of all the banks covered by Bankscope in the same country (see Table 1). On average, our final sample accounts for more than 50% of total bank assets in every country except for Austria. Table 2 presents some general descriptive statistics for both the full sample available in Bankscope and our final sample considering both control cutoffs (10% or 20%). It shows no major differences between the two samples.

[Insert Tables 1 and 2 about here]

[3] We identify all banks for which total asset growth rate is greater than 35%. Then, we check in Bankscope if such a bank experienced a merger-acquisition event. This applies to 8 banks.
[4] Note that even though we present the general characteristics of both samples, we carry out all our regressions on the sample of 381 banks and use the sample of 405 banks only for robustness.

2.2. Building of Control Chains

We start by gathering data on ultimate control/ownership for our sample banks by collecting information on direct ownership from Bankscope using DVDs issued in 2004, 2006 and 2010. For incomplete information or information not available in Bankscope, we search in annual reports. Because the shareholders of these banks are often corporations themselves, we build the control chain for each bank by considering numerous intermediate levels until we identify the ultimate controlling shareholders. When non-banking firms are found to be shareholders at intermediate levels, to go deeper, we use the Amadeus database as a primary source still considering DVDs of 2004, 2006 and 2010, and complete it with information from annual reports available on the firms' website. We collect ownership data for three years of our sample period (2004, 2006 and 2010). Previous studies argue that ownership patterns are relatively stable over time ((La Porta et al. 1999), (Caprio et al. 2007), (Laeven and Levine 2008)). Hence, we assume that ownership is stable during a period of two years. We do not build the control chains for the year 2008 because most of the observations found in the 2010 DVD are for 2007 and 2008 (respectively 29% and 48% in the sample of 381 banks)[5]. Hence, our control chains for 2010 can be considered as reasonably accurate to depict the ownership anatomy of firms in 2008.

We classify a bank as a controlled bank if it has at least one shareholder with direct and indirect voting rights that sum up to 10% or more[6]. This control level is used because it provides a significant threshold of votes for an effective control and most of our sample countries mandate disclosure of at least 5% of ownership[7]. In addition, this control level is more accurate in the case of banking institutions due to greater diffusion of ownership compared to non-financial firms ((Prowse 1995), (Faccio and Lang 2002)). Out of 381 commercial banks, we have 31 banks that are persistently widely-held (i.e. no shareholder controls 10% or more) and 317 that are controlled throughout the sample period while 33 banks undergo a change. To build the control chains we focus on controlled banks. If the controlling shareholder is independent, i.e. she/he is not controlled by another shareholder, we consider her/him as the ultimate owner of the votes. If, however, the controlling shareholders identified at the intermediate levels of the control chain are corporations themselves, we

[5] Bankscope and Amadeus update their ownership data every 18 months. In each DVD, historical data are not disclosed; information is only provided for the last changes with the corresponding dates.
[6] We also build the control chains by considering 20% as a control threshold instead of 10%.
[7] For example in France, Germany and Spain, owners that hold more than 5% must disclose their identity. The disclosure threshold is 2% in Italy and 3% in the United Kingdom.

continue the process and identify large shareholders (control 10% or more) in these corporations until we find the ultimate owners of the votes. Once we get our control chains, we classify the ultimate owners of the controlled banks into six main categories: BANK if the ultimate owner is a widely-held bank, FAMILY if the ultimate owner is an individual or a family, STATE if the ultimate owner is a state or a public authority, INDUST if the ultimate owner is an industrial firm, INSTIT if the ultimate owner is a non-bank financial institution such as a financial or insurance company, or a mutual/pension fund, MANAGER if the ultimate owner is a manager and finally the category OTHER which includes Foundations/Research institutes and Cross-holdings.

2.3. Measuring the Wedge

We need to compute the wedge, i.e. the divergence between the voting and cash-flow rights of the largest ultimate owner to assess its influence on the bank's capital adjustment behavior. We use for that the last link principle method initially proposed by (La Porta et al. 1999).

We consider that a bank has a controlling ultimate owner when the latter holds either directly and/or indirectly a percentage of voting rights at least equal to 10%. Direct voting rights involve shares registered in the shareholder's name whereas indirect voting rights[8] refer to the shares held by entities that the ultimate shareholder controls (at the 10% level). The total voting rights of the controlling shareholder (VR_{it}) are the sum of direct and indirect shares held in bank i at time t. When multiple shareholders have 10% or more of the votes, we define the controlling shareholder as the owner with the greatest voting rights[9]. Similarly, the controlling ultimate owner can hold cash-flow rights directly and/or indirectly. While direct cash-flow rights refer to the percentage of shares directly held in the bank, indirect cash-flow rights are calculated as the product of the percentages of shares held by the shareholders along

[8] The computation of indirect voting rights differs according to the method used: last link principle (La Porta et al. 1999) or the weakest link principle (Claessens et al. 2000). With the last link principle, indirect voting rights are equal to the percentage of shares held by the last shareholder in the control chain, i.e. the shareholder directly linked to the considered bank. With the weakest link principle, indirect voting rights are equal to the weakest percentage of shares held along the control chain. In this study we also compute indirect voting rights using the weakest link principle. Note however that in our framework we do not use a continuous variable but a binary variable (dummy variable indicating divergence between voting rights and cash-flow rights). Using both methods lead to the same binary variable definition.

[9] Over the 2003-2010 period, amongst 350 (out of 381) controlled banks, 234 are continuously controlled by only one ultimate owner, 72 are continuously controlled by several ultimate owners, and the number of controlling shareholders changes over time for 44 banks.

the control chain. The total cash-flow rights (CFR_{it}) of the controlling shareholder are the sum of direct and indirect cash-flow rights held in bank i at time t.

For example, assume that UO is the ultimate owner of bank B and the control chain from UO to B is a sequence of two other corporations C1 and C2 (each entity in the control chain holds at least 10 per cent of voting rights over the next one). Assume UO holds 10% in C2, C2 holds 20% in C1 which in turn holds 30% in the bank (B), i.e. the control chain is presented as follows $\mathrm{UO} \rightarrow (10\%)\mathrm{C2} \rightarrow (20\%)\mathrm{C1} \rightarrow (30\%)$ B. Indirect voting rights of UO computed on the basis of the last link principle method are equal to 30% whereas the cash-flow rights are equal to 0.6%, i.e. 10%*20%*30%. If the ultimate owner controls bank B through multiple chains, we sum the voting rights (cash-flow rights) across all these chains. Suppose that UO holds directly an additional proportion of 40% in bank B, the voting rights of UO are equal to 70%, i.e. $30\% + 40\%$ whereas the cash-flow rights are 40.6%, i.e. $0.6\% + 40\%$[10].

Substantial divergence between voting and cash-flow rights may exist in the presence of indirect control chains[11]. In our analysis we define the control-ownership wedge as the difference between the voting and the cash-flow rights of the largest shareholder ($WEDGE_{it}=VR_{it}-CFR_{it}$) for bank i at time t as in La Porta et al. (1999). We define a dummy variable W_{it} equal to one if $WEDGE_{it}$ is not null[12], and zero otherwise. In the previous example, WEDGE is equal to 29.4%, i.e. 70%-40.6%. If the bank is widely-held or in the case of cross-holdings[13] we set its voting rights and cash-flow rights equal to zero, and the wedge is null in these cases. Ownership structure and particularly the divergence between voting and cash-flow rights can change over time; accordingly, the classification of banks as without or with a wedge might also change. Amongst the 381 banks in our sample (control cutoff of 10%), 204 are continuously categorized without a wedge and 135 with a wedge while 42 banks switch from one category to the other over the sample period.

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[10] Using the same example, indirect voting rights of UO computed on the basis of the weakest link principle method are equal to 10%. The total voting rights (direct and indirect) of UO using this method are equal to 50%, i.e. $10\% + 40\%$.

[11] The divergence between voting and cash-flow rights may arise from both indirect control chains (pyramids and multiple holdings) and dual class shares. Bankscope and Amadeus measure ownership using the voting rights and do not provide information on cash-flow rights. Given the information we have, we capture the divergence between voting and cash-flow rights stemming from solely the use of indirect control chains. We do not view this as a serious shortcoming for our study as previous studies ((Claessens et al. 2002), (Faccio and Lang 2002), (Azofra and Santamaria 2011)) show that the use of dual class shares is relatively scarce.

[12] When the wedge is not null, 75% of the observations relate to ultimate owners that control through a divergence greater or equal to 15.75%.

[13] Cross-holdings represent 1.34% of the full sample (corresponding to 4 banks, 24 observations) using a control cutoff of 10%. Cross-holdings represent 0% in the sample using the control cutoff of 20%.

2.4. Descriptive Statistics

Table 3 reports information on the largest ultimate owner's voting rights and cash-flow rights for our sample of European banks when we use a control cutoff of 10% (corresponding to 381 banks) or 20% (corresponding to 405 banks) to identify the ultimate shareholder. Considering the sample of 381 banks, our data show that around 84% of the observations refer to banks controlled by at least one shareholder whereas 15.63% of the observations relate to widely-held banks. Amongst banks that are controlled, 56.47% of the observations relate to an ultimate shareholder with a null wedge (VR=CFR) and 43.53% to an ultimate shareholder with a divergence between voting and cash-flow rights (VR≠CFR). This sample composition allows us to accurately conduct our empirical investigation. The data also suggest that the type of controlling shareholders is diverse. In the full sample (regardless of wedge characteristics) controlling shareholders fall predominantly into the categories of widely-held banks (38.47% of the observations) and individuals and families (22.19%) and to a lesser extent, institutional investors (14.22%) and governments (11.62%). Industrial firms and managers less often control banks in our sample, respectively 5.58% and 1.53% of the observations. Individuals/families and governments are nevertheless the predominant controlling shareholders in the subsample of banks with a divergence between voting and cash-flow rights (VR≠CFR), respectively 26.56% and 20.15%. This finding is consistent with the view that divergence between both rights could enable controlling owners, and especially families, to expropriate minority shareholders and divert a large fraction of resources (Almeida and Wolfenzon 2006). In contrast, widely-held banks are the predominant controlling shareholders of banks with a null wedge (VR=CFR). This is consistent with the view that widely-held banks are less likely to engage in expropriation as the resulting benefits are distributed among multiple owners and also because regulation, when stringently enforced, makes expropriation more costly (Haw et al. 2010).

Table 4 shows that, on average, the largest ultimate owner without a wedge holds 67.27% (control threshold 10%) of banks' equity capital. This high percentage is consistent with the presumption that a controlling shareholder with no divergence between voting and cash-flow rights is more inclined toward profit maximization (Azofra and Santamaria 2011). In contrast, the largest controlling shareholder with a wedge holds on average 79.97% of the voting rights and only 19.01% of the cash-flow rights. This leads to an average wedge of 60.96%. As cash-flow rights are almost four times lower than voting rights, the controlling shareholder should be more inclined to protect her/his voting rights rather than her/his cash-flow rights.

On the whole, the descriptive statistics reported in Table 5 show that on average, banks controlled by an ultimate owner with a wedge (VR≠CFR) hold lower Tier 1 risk-based capital ratios, are less profitable and rely more on traditional intermediation activities (loans) than banks with a null wedge (VR=CFR). Furthermore, the proportion of banks with a wedge that pay dividends is lower than that of banks without a wedge. The former might pay lower dividends to more easily adjust their capital ratios via internal funds or because of the effect of expropriation (Faccio et al. 2001).

[Insert Table 3, 4 and 5 about here]

We now move to the approach we follow to investigate the impact of the divergence between voting and cash-flow rights on banks' capital adjustment speed.

3. Methodology

Banks can adjust their capital ratios toward the optimal level by modifying their capital structure (debt/equity) and/or their size (total assets or risk-weighted assets). In this paper we aim to investigate whether the adjustment process is dependent on a bank's control/ownership patterns. Specifically, we question whether changes in capital are affected by the divergence between the voting and the cash-flow rights of the bank's ultimate owner. For this purpose, we first use a partial capital adjustment model focusing solely on adjustments stemming from changes in equity capital. We then allow the model to account for internal changes in equity capital (earnings) and external adjustment (equity issues or repurchases). We finally introduce flexibility to allow for asymmetric upward and downward adjustment speeds. Asymmetries in capital adjustment speeds possibly reflect differences in the cost of control dilution stemming from external recapitalization (equity issues). Hence, if a bank adjusts its equity capital at the same rate when it faces an upward or downward change and indifferently either internally or externally, we would presume that such a bank does not fear control/ownership dilution. If a bank adjusts its external equity capital at a lower rate when it needs to increase it (upwards) than when it has to reduce it (downwards) we conjecture that such a behavior is driven by the fear of control/ownership dilution and that the bank will most likely change its capital internally by also possibly reducing its size (selling assets) and/or its risk exposure (substituting safe assets to risky assets).

3.1. Baseline Capital Adjustment Model

Because our aim is to investigate how banks modify their capital (numerator) rather than their size (denominator) to reach the target capital ratio we build on a partial capital adjustment model used in the previous literature ((Berger et al. 2008), (Byoun 2008)) and specify the model as follows:

$$\left(\frac{K}{A}\right)_{it} - \frac{\widetilde{K}_{it-1}}{A_{it}} = \lambda \left[\left(\frac{K}{A}\right)^{*}_{it} - \frac{\widetilde{K}_{it-1}}{A_{it}}\right] + \epsilon_{it} \tag{1}$$

Where $\left(\frac{K}{A}\right)_{it}$ refers to the book value of capital (K_{it}), measured as Tier 1 regulatory capital, divided by A_{it} which stands for either bank total assets or risk-weighted assets, both measured at time t and for bank i; $\left(\frac{K}{A}\right)^{*}_{it}$ is the target (desired) simple (non risk-based) or risk-based Tier 1 capital ratio for bank i at time t, depending on the definition of A_{it} we consider; and $\frac{\widetilde{K}_{it-1}}{A_{it}}$ is the adjustment model's starting point. ϵ_{it} is the error term.

The right-hand side of Equation (1) corresponds to the required/desired change in bank capital (scaled by A_{it}) to adjust to the target capital ratio, i.e. to the target deviation denoted hereafter TDE_{it}. The left-hand side of Equation (1) is the observed change in bank capital (scaled by A_{it}) between t-1 and t, i.e. the actual deviation denoted ADE_{it}. Hence, in this specification, the coefficient λ represents the capital adjustment speed, i.e. the proportion a bank adjusts via changes in capital to move to the target level.

The observed change in bank capital in Equation (1) can arise from equity issues or repurchases (external adjustment) and/or earnings or losses (internal change). To differentiate these two alternatives, we consider two different definitions of $\widetilde{K}_{it-1}$. To isolate equity issues/repurchases, we first define $\widetilde{K}_{it-1}$ as the sum of the lagged value of Tier 1 regulatory capital (K_{it-1}) and the current net income (NI_{it}) minus the current dividend payment (DIV_{it}). In this case, ADE_{it} and TDE_{it} are defined as:

$$\begin{aligned} ADE_{it} &= \left(\frac{K}{A}\right)_{it} - \frac{K_{it-1} + NI_{it} - DIV_{it}}{A_{it}} \\ TDE_{it} &= \left(\frac{K}{A}\right)^{*}_{it} - \frac{K_{it-1} + NI_{it} - DIV_{it}}{A_{it}} \end{aligned} \tag{2}$$

Second, to take into consideration both internal and external changes in capital, we simply define $\widetilde{K}_{it-1}$ as the lagged value of K_{it} (i.e. $\widetilde{K}_{it-1}$=K_{it-1}). In this case ADE_{it} and TDE_{it} are defined as:

$$\begin{aligned} ADE_{it} &= \left(\frac{K}{A}\right)_{it} - \frac{K_{it-1}}{A_{it}} \\ TDE_{it} &= \left(\frac{K}{A}\right)^{*}_{it} - \frac{K_{it-1}}{A_{it}} \end{aligned} \tag{3}$$

In both cases, Equation (1) can be expressed more simply as:

$$ADE_{it} = \lambda \ TDE_{it} + \ \epsilon_{it} \tag{4}$$

3.2. Ownership Augmented Capital Adjustment Model

To investigate the influence of ownership on the adjustment speed, we allow the capital adjustment speed (λ) in Equation (4) to be asymmetric with regards to upward and downward adjustments depending on the presence or the absence of a divergence between the ultimate owner's voting and cash-flow rights. We therefore specify the following estimation model:

$$\begin{aligned} ADE_{it} = {} & (\lambda + \theta \ BELOW_{it-1} + \lambda' W_{it} + \theta' \ W_{it} \ BELOW_{it-1}) \ TDE_{it} \\ & + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it} \end{aligned} \tag{5}$$

Where

μ_i, δ_c and τ_t are respectively individual, country and time fixed effects.

$BELOW_{it-1}$ is a dummy variable equal to one if the lagged capital ratio $\left(\frac{K}{A}\right)_{it-1}$ is below its target level, meaning that the bank needs to increase its capital for a given size and/or decrease its assets (or risk-weighted assets) for a given amount of capital to move toward the target capital ratio, and zero otherwise.

W_{it} is a dummy variable equal to one if bank i at time t is controlled by a shareholder with a wedge, i.e. with a divergence between voting and cash-flow rights, and zero otherwise.

The parameters λ and $\lambda + \theta$ refer to banks with no divergence between voting and cash-flow rights (W_{it}=0). They respectively measure the proportion of capital used by such banks to adjust to the target either downwards ($BELOW_{it-1} = 0$) or upwards ($BELOW_{it-1} = 1$). As argued above, we expect the parameter λ to be positive and significant and the coefficient θ to be non-significantly different from zero, no matter which definition is used for $\mathrm{ADE}_{\mathrm{it}}$ and $\mathrm{TDE}_{\mathrm{it}}$, i.e. external adjustment (Equation (2)) or both external and internal adjustment (Equation (3)). Banks controlled by an ultimate owner without a wedge are not expected to adjust upwards more slowly than downwards, either internally or externally, because they do not fear control/ownership dilution.

The parameters $\lambda + \lambda'$ and $\lambda + \theta + \lambda' + \theta'$ refer to banks controlled by an ultimate owner with a wedge (W_{it} =1) and respectively correspond to downward and upward capital adjustment rates. Such banks are expected to adjust their capital, either internally or externally, as quickly (i.e. at the same rate) as banks without a wedge when they are above their target capital ratio (λ' is statistically non-significant with both definitions of ADE and TDE) but not when they are below. Indeed, if the controlling shareholder with a wedge fears the dilution of her/his control power; the bank will be reluctant to issue equity to adjust its capital ratio when it is below the target capital ratio. We expect the coefficient θ' to be negative and significant as far as external adjustment is concerned (ADE and TDE defined as in Equation (2)). In the extreme case, the sum $\lambda + \theta + \lambda' + \theta'$ could be equal to zero which would mean that banks with a wedge that are below their target capital ratio do not at all issue equity to move to the target level. Nevertheless, such banks might adjust to the target internally. The coefficient θ' might therefore be non-significant when both internal and external adjustments are considered (ADE and TDE defined as in (Equation (3)).

To be able to estimate Equation (5), we need to estimate the target capital ratio to compute the target deviation $\mathrm{TDE}_{\mathrm{it}}$ and identify banks that are below or above their target.

3.3. Estimating the Target Capital Ratio

We recall that $\left(\frac{\mathrm{K}}{\mathrm{A}}\right)^{*}_{\mathrm{it}}$ in Equation (1) is not observable. Thus estimating the target capital ratio $\left(\frac{\mathrm{K}}{\mathrm{A}}\right)^{*}_{\mathrm{it}}$ is a prerequisite to our analysis. Following (Marcus 1983), (Berger et al. 2008) and (Brewer et al. 2008) we model the target capital ratio as a function of the bank's characteristics using the following partial adjustment model to control for potential adjustment costs:

$$\left(\frac{\mathrm{K}}{\mathrm{A}}\right)_{\mathrm{it}} = (1-\gamma)\left(\frac{\mathrm{K}}{\mathrm{A}}\right)_{\mathrm{it}-1} + \gamma\sum_{j=1}^{J}\beta_{\mathrm{j}}\mathrm{x}_{\mathrm{jit}} + \phi_{\mathrm{i}} + \sum_{c=2}^{17}\alpha_{\mathrm{c}}\delta_{\mathrm{c}} + \sum_{t=2}^{8}\varphi_{\mathrm{t}}\tau_{\mathrm{t}} + \eta_{\mathrm{it}} \tag{6}$$

where $\left(\frac{\mathrm{K}}{\mathrm{A}}\right)_{\mathrm{it}}$ is the book value of Tier 1 regulatory capital divided by either total assets (T1TA) or risk-weighted assets (T1RWA), both measured for bank i at time t; γ is a scalar adjustment speed; $\mathrm{x}_{\mathrm{jit}}$ is the j^{th} observable variable commonly used in the previous literature on the determinants of the optimal capital ratio for bank i at time t (see Table A1 in Appendix for a description of these variables and Table A2 for the correlation matrix[14]); β_{j} is the parameter value of the contribution of the j^{th} variable to the bank's capital ratio. The set of explanatory variables includes -among other variables- the dummy variable that captures the wedge (W_{it}). Including the wedge among the determinants of the target capital ratio is motivated by the fact that, on average, banks without a wedge hold higher Tier 1 capital ratios than banks with a wedge (see Table 4). This dummy variable (W_{it}) allows us to take into account that banks with and without a wedge might not have the same target capital ratio (Brewer et al. 2008). ϕ_{i}, δ_c and τ_t are respectively individual, country and time fixed effects. η_{it} is the error term.

We use the fitted value from regression (6) to obtain an estimate for the target capital ratio $\left(\frac{\mathrm{K}}{\mathrm{A}}\right)^{*}_{\mathrm{it}}$.

4. Results

4.1. Effect of the control-ownership wedge on capital adjustment speed

In this study, we aim to test for the presence of potential asymmetries in banks' capital adjustment speed depending on their ownership structure. For this purpose, we proceed in two steps. In the first step, we estimate the target capital ratio $\left(\frac{\mathrm{K}}{\mathrm{A}}\right)^{*}_{\mathrm{it}}$ as modeled in Equation (6). We estimate the partial capital adjustment model specified in Equation (6) using the (Blundell and Bond 1998) dynamic panel estimator. We apply the forward orthogonal deviation

[14] On the whole, the correlation coefficients are low. To deal with multi-colinearity issues, we orthogonalize the natural logarithm of total assets (LnTA) on charter value (CV) and the return on assets (ROA) on the cost of equity (COSTEQ).

transformation as proposed by (Arellano and Bover 1995) instead of first differencing because the model as specified in Equation (6) includes time-invariant variables (country fixed effects). We use the two-step estimator and apply a finite sample correction of the two-step covariance matrix derived by (Windmeijer 2005). We limit the number of instruments by restricting the lag range used to generate them to three and four when we respectively estimate the non-risk based (T1TA) and the risk-based (T1RWA) capital ratios and to two instruments for both capital ratios when we run regressions on the subsamples of banks without and with a wedge. We apply GMM instruments on the bank-level explanatory variables that are highlighted by the literature to be endogenous[15]. The remaining variables are considered as strictly exogenous. We check the validity of our instruments using the Hansen test, i.e. the test of the exogeneity of all instruments as a group and AR2 test, i.e. the Arellano-Bond test of the absence of second-serial correlation in the first-differenced residuals. The results obtained for the partial capital adjustment model are reported in Table 6 for: (i) the baseline specification without the dummy variable to differentiate banks with and without a wedge; (ii) the augmented specification including a dummy variable W_{it} (wedge differentiated target) to differentiate banks with and without a wedge (Equation (6)); and (iii) the baseline specification estimated separately for the subsamples of banks with (VR≠CFR) and without (VR=CFR) a wedge. The dummy variable W_{it} turns out to be significant, highlighting the necessity to take into account that banks with and without a wedge might not have the same target capital ratio.

[Insert Table 6 about here]

In the second step, we use the fitted values of Equation (6) as estimates of the target capital ratio[16] for each bank every year $\left(\frac{\widehat{K}}{A}\right)_{it}^{*}$. This estimated target capital ratio is then used to compute the fitted target deviation[17] ($\widehat{TDE_{it}}$) and to identify banks that are above or below their target capital ratio ($\widehat{BELOW}_{it-1}$) (see Table A3 in the Appendix for the definition and descriptive statistics of the computed variables). After testing for the relevance of fixed versus random bank specific effects, we estimate Equation (5) using the random effects Generalized

[15] This is applied to $T1TA_{t-1}$, $T1RWA_{t-1}$, $LnTA_t$, ROA_t, LLP_t, $LOTA_t$ and $MKTDISC_t$ (see Table A1 in the Appendix for a definition of these variables).

[16] The fitted values of the target capital ratio from Equation (6) are computed as follows: $\left(\frac{\widehat{K}}{A}\right)_{it}^{*} = \sum_{j=1}^{J} \widehat{\gamma\beta_j} x_{jit} + (\widehat{1-\gamma}) \left(\frac{K}{A}\right)_{it-1} + \widehat{\phi_i} + \sum_{c=2}^{17} \widehat{\alpha_c}\delta_c + \sum_{t=2}^{8} \widehat{\varphi_t}\tau_t$

[17] $\widehat{TDE_{it}} = \left(\frac{\widehat{K}}{A}\right)_{it}^{*} - \frac{\widetilde{K}_{it-1}}{A_{it}}$

Least Square estimator[18] with robust standard errors (named GLS with RS errors hereafter). The Hausman test fails to reject the null hypothesis of exogeneity of the regressor. Hence, we opt for the use of bank specific random effect estimation which leads to more efficient estimates in such a case and allows for country specific effects by including country dummies in Equation (5). Table 7 reports the results with the two different definitions of the Tier 1 capital ratio we use (Tier 1 capital divided by either total assets $T1TA_{it}$ or risk-weighted assets $T1RWA_{it}$) and the two definitions of the actual and the target deviations (ADE_{it}, TDE_{it}) we consider to differentiate external capital adjustment (Equation (2)) from both external and internal changes in capital (Equation (3)). We further report in Table 8 the estimation results on two distinct subsamples to differentiate banks with and without a wedge instead of using interaction terms as in Equation (5)[19].

[Insert Tables 7 and 8 about here]

The coefficient of the variable $\widehat{TDE_{it}}$ (λ) is positive and significant whereas the coefficient of the interaction term $\widehat{BELOW}_{it-1} \times \widehat{TDE_{it}}$ (θ) is not significant; these results hold for all the regressions based on either external or both external and internal capital changes. Banks controlled by a shareholder with no divergence between voting and cash-flow rights adjust their capital upwards ($\lambda + \theta$) and downwards (λ) at the same rate ($\theta = 0$). This behavior is observed in the use of external and internal capital considered together but also for that of external capital solely. Such banks do not appear to fear control dilution and manage their capital through both equity issues or equity repurchases.

For banks controlled by a shareholder with a divergence between voting and cash-flow rights, the coefficient of the interaction term $\widehat{TDE_{it}} \times W_{it}$ (λ') is never significant. Banks with a wedge adjust their capital when they are above their target as quickly as banks without a wedge. We further find that the coefficient of the interaction term $\widehat{BELOW}_{it-1} \times W_{it} \times \widehat{TDE_{it}}$ (θ') is negative and significant, indicating that banks with a wedge behave differently when they are below or above their target capital ratio. When only equity issues are considered to

[18] We control for bank specific effects not only because previous studies (Gropp and Heider 2011) argue that bank level fixed effects contribute to explain the adjustment speed but also because the Fisher test rejects the null hypothesis of homogeneity in the individual dimension. Nevertheless, we also perform the regressions using the Ordinary Least Square (OLS) estimator. The results, not reported here, are almost similar. Note, however that consistently with previous studies (Byoun 2008), adjustment speeds are lower when we use OLS. To check for potential measurement error bias due to the use of the fitted value of the target deviation ($\widehat{TDE_{it}}$), we use the Generalized Moments Method (GMM) as an alternative estimation method. The results using this method, similar to those obtained with GLS with RS errors, confirm the absence of measurement error bias.

[19] We then estimate the following equation: $ADE_{it} = \left(\lambda + \theta\, \widehat{BELOW}_{it-1}\right)\widehat{TDE_{it}} + +\mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

adjust capital to the target level, the Wald test shows that the sum $\lambda + \theta + \lambda' + \theta'$ is non-significant. Hence, when they are below their target, banks with a wedge are reluctant to issue equity, possibly because of the fear of control dilution. However, when both external and internal capital adjustments are taken into consideration, the sum $\lambda + \theta + \lambda' + \theta'$ is positive and significant indicating that such banks counterbalance their reluctance to issue new equity by increasing their capital internally to reach the optimal level.

We obtain the same results when running the regressions on the subsamples of banks with and without a wedge (see Table 8).

In summary, the results show that the presence or absence of a divergence between the ultimate owner's voting and cash-flow rights actually affects banks' capital adjustment behavior. Banks without a wedge are found to adjust their capital at the same rate regardless of their initial position (below or above the target capital ratio level), and indifferently, relying on both internal and external or only external capital adjustments. Conversely, banks with divergence between voting and cash-flow rights adjust their capital either externally or internally only when they need to reduce it to move closer to the target level. When the adjustment process requires an increase in capital, such banks tend to favor internal adjustment by drawing from earnings, possibly because of the fear of control dilution stemming from new equity issues. Our results therefore suggest that to preserve the controlling power of the existing shareholder, banks with a wedge are reluctant to issue equity to move their Tier 1 regulatory capital upwards. Given this finding, we presume that such a behavior might be more pronounced under Basel III as the Basel Committee has narrowed the definition of Tier 1 capital to ordinary shares only. Because such banks are less able to adjust their Tier 1 capital by issuing equity without diluting the voting rights[20], they might increase their reliance on internal adjustments and asset downsizing. Given their prevalence in Europe and their important contribution to the economy as major lenders, our findings have important policy implications[21].

We now go further by analyzing the conditions under which the fear of control dilution is more or less pronounced with possibly stronger implications.

[20] Conversely to preferred shares which are no more eligible as Tier 1 capital under the Basel III agreement ordinary shares carry voting rights.

[21] Banks with a wedge are frequent in Europe; they represent around 50% of the controlled-banks. These banks are more focused on traditional intermediation activities (loans), and contribute up to 50% of the total loans granted to the economy as a whole. For more details see Table A4 in the Appendix.

4.2. Factors affecting the link between the control-ownership wedge and capital adjustment speed

Our main results support the conjecture that controlling shareholders with a wedge avoid issuing equity to adjust their capital ratio upwards possibly to preserve their control. To go deeper in our investigation, in this section we consider some factors that might strengthen or weaken the relationship between the wedge and bank capital adjustment speed. We investigate the type of the largest shareholder, the level of shareholder protection and the 2008 financial crisis[22].

Largest controlling owner's type

The fear of control dilution may be stronger if the largest controlling shareholder is a family or a state and weaker if she/he is a bank or any other category. The literature argues that the divergence between voting and cash-flow rights attracts families and states if these expect diverting higher resources (Almeida and Wolfenzon 2006). (Cronqvist and Nilsson 2005) find that family-controlled firms avoid equity issuing methods that could dilute their control benefits or impose more monitoring on them. Thus, family and state ultimate owners are expected to have significant incentives to force banks to avoid capital ratio adjustment through external recapitalization which can threaten their control position.

We test this hypothesis using the two subsamples of banks with and without a wedge. We define a dummy variable FS_{it} that takes the value one if the largest ultimate owner of bank i at time t is a family or state, and zero otherwise. We interact this dummy variable with the fitted target deviation by differentiating upward and downward capital adjustments[23] for both subsamples. The estimation results are presented in Table 9. For the subsample of banks without a wedge (VR=CFR), the results still show that family or state controlled banks adjust their capital upwards and downwards as quickly as non-family and non-state controlled banks (θ , λ' and θ' are never significant for both definitions of $\mathrm{ADE_{it}}$ and $\mathrm{TDE_{it}}$). Regarding the subsample of banks with a wedge (VR≠CFR), the coefficient θ of the interaction term $\widehat{\mathrm{BELOW}}_{\mathrm{it-1}} \times \widehat{\mathrm{TDE}_{\mathrm{it}}}$ measuring upward capital adjustment for banks controlled by a non-family or a non-state shareholder is negative but non-significant. The coefficient θ' of the

[22] For simplicity, we run here estimates on the two subsamples of banks with and without a wedge instead of augmenting Equation (5) with numerous interaction terms. We check the robustness of our results using such augmented models and we find similar results, which are available upon request.

[23] We estimate the following equation: $\mathrm{ADE_{it}} = \left(\lambda + \theta\, \widehat{\mathrm{BELOW}}_{\mathrm{it-1}} + \lambda' \mathrm{FS_{it}} + \theta' \widehat{\mathrm{BELOW}}_{\mathrm{it-1}} \mathrm{FS_{it}}\right) \widehat{\mathrm{TDE}_{\mathrm{it}}} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

interaction term $\widehat{BELOW}_{it-1} \times FS_{it} \times \widehat{TDE}_{it}$ is negative and significant (although only at the 10% level when we consider both internal and external capital changes) suggesting that family or state controlled banks adjust their capital upwards more slowly than non-family or non-state banks. The Wald test shows that the sum $\lambda + \theta + \lambda' + \theta'$ is non-significant when we consider external adjustment (equity issue). These results are consistent with our predictions that family and state ultimate owners have stronger incentives to protect their control compared to non-family and non-state ultimate owners.

Legal rights

We further test whether the level of shareholder protection rights affects the relationship between the wedge and capital adjustment speed. Expropriation is more likely to occur in countries with weak shareholder protection (La Porta et al. 2002). Hence, we conjecture that the largest controlling shareholder with a wedge might be more reluctant to externally raise equity in countries with weak shareholder protection. This is because control in such countries is more valuable in the sense that a controlling owner can divert significant resources and protect herself/himself from becoming a minority shareholder and suffer expropriation.

We again examine this hypothesis using the two subsamples of banks with and without a wedge. To represent the level of shareholder protection, we use the index as calculated in La Porta et al. (1998).This index considers minority shareholders' voting powers, their ease of participation in corporate voting, and their legal protection against expropriation by managers and majority shareholders. For our sample, the index has a median of 2.12 and ranges from 0 (Belgium) to 5 (the United Kingdom). We define a dummy variable (SPRc) that takes the value of one if the shareholder protection index in country c is greater than the cross-country median value, and zero otherwise[24]. The estimation results are presented in Table 10. Considering the subsample of banks without a wedge (VR=CFR), the results indicate that banks established either in countries with a relatively weak or strong shareholder protection adjust their capital upwards and downwards at the same rate (θ, λ' and θ' are never significant). For the subsample of banks with a wedge (VR≠CFR), the coefficient θ of the interaction term measuring upward adjustment for banks headquartered in countries with weak shareholder protection is negative and always significant. Thus, to adjust toward the target capital ratio, banks established in countries with relatively weak shareholder protection are more reluctant to issue equity than those operating in countries with strong shareholder

[24] We estimate the following equation: $ADE_{it} = (\lambda + \theta\widehat{BELOW}_{it-1} + \lambda' SPR_c + \theta' \widehat{BELOW}_{it-1} SPR_c)\widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

protection. The Wald test further shows that the sum $\lambda + \theta$ is non-significant when we only consider adjustment through external capital (equity issues). This result is consistent with our prediction: a higher level of shareholder protection tempers the fear of control dilution of banks with a wedge, leading them to adjust their capital ratio upwards and downwards via changes in external capital even though the downward adjustment rate is higher.

Financial crisis

We examine whether the 2008 financial crisis has impacted capital adjustment for both subsamples of banks, i.e. with and without a wedge. The global financial crisis of 2008 may have influenced the capital adjustment process in several ways.

Firstly, the financial crisis might have influenced the way banks use external capital to adjust toward their target capital ratio in two opposite directions. On the one hand, the cost of raising additional capital is higher during downturns and thus both types of banks are expected to be reluctant to issue equity to adjust their capital ratios. On the other hand, during the recent crisis, many banks have benefitted from public support, particularly through capital injections. In addition, banks controlled via a wedge are generally located at the bottom of the pyramid. Hence, their ultimate shareholders might have had incentives to transfer funds from firms located at the top of the pyramid to support them[25] (Friedman et al. 2003). This rescue package and the possibility of propping up may lead to an increase in external capital.

Secondly, the financial crisis may have also modified the way banks use internal capital to adjust their capital ratio. Because banks incurred high losses or at least a sharp decrease in earnings during the crisis they are expected to less rely on internal funds with potentially a higher drop for banks that significantly pursued such strategies before the crisis.

To test the impact of the 2008 financial crisis, we use the two subsamples of banks with and without a wedge. We define a dummy variable CRS_{it} that takes a value one if the observation is from 2008 or 2009, and zero otherwise. Then, we interact this dummy variable with the fitted target deviation by differentiating upward and downward capital adjustments[26]. The estimation results are presented in Table 11. The results show that the coefficient θ of the

[25] This behavior is known as propping up. The literature (Friedman et al. 2003) defines propping (transfer of funds to the firm) as a negative tunneling behavior (transfer of funds out of the firm) and assumes that the propensity to tunnel is highly correlated with the propensity to prop up. The reason behind the propping up behavior is that earnings in the future, especially from profit diversion, are valuable for the controlling shareholders and they therefore aim to keep such firms in business and avoid their failure. This allows them to exploit such opportunities in the future.

[26] We estimate the following equation: $ADE_{it} = \left(\lambda + \theta \widehat{BELOW}_{it-1} + \lambda' CRS_{it} + \theta' \widehat{BELOW}_{it-1} CRS_{it}\right) \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

interaction term measuring upward adjustment before the crisis is negative and significant only for banks with a wedge (although at only the 10% level when we consider both internal and external changes in capital). This result suggests that before the crisis banks with a wedge differently weigh upward and downward capital adjustments, i.e. they adjust slowly when they face a shortage in capital and need to increase it to move to the target level. The Wald test further indicates that the sum $\lambda + \theta$ is not significantly different from zero when only external capital adjustment is considered. This implies that banks with a wedge do not at all adjust by issuing equity before the crisis.

The parameter λ' measuring downward adjustment during the crisis is always negative and significant for both types of banks (with and without a wedge). This suggests that both types of banks have tried to maintain their buffer stock and have adjusted downwards at a lower extent during the crisis.

The parameter θ' of the interaction term measuring upward adjustment during the crisis is furthermore positive and significant only for the subsample of banks with a wedge and only when we consider adjustment through external capital. Banks with a wedge have thus increased the use of external capital to adjust upwards. This might be due to capital injections received by these banks during the financial crisis, the propping up behavior of ultimate owners or because they aim to signal to the market their ability to adjust as quickly as banks without a wedge. The non-significance of this parameter when we consider both internal and external changes in capital might be due to the fact that the losses incurred during the financial crisis might have outweighed the increase in external capital.

Sensitivity analysis

We perform several regressions to check the robustness of our multiple step results (i.e. first regarding the effect of the wedge on bank capital adjustment speed in general and then deeper by considering the owner's type, the level of shareholder protection and the 2008 financial crisis). Estimation results are reported in the Appendix[27].

[27] For each of our robustness investigations in which we use the two-step estimation procedure, we re-estimate Equation (6) to compute the fitted value of the target capital ratio using the considered sample. The robustness checks regarding this first step lead to similar results, which are available upon request. Regarding the second step estimation, we run our regressions using interaction terms as in Equation (5) as well as subsamples of banks with and without a wedge for each robustness check (when this is possible). However, to save space we only report the estimation results using interaction terms as in Equation (5). Note that even though we carry out each robustness on our main investigations (section 4.1.) but also on our deeper investigations (section 4.2.), we only report the results of the effect of the wedge on bank capital adjustment speed (Equation (5)), again for lack of space. The robustness checks on our deeper investigations lead to similar conclusions and are available upon request.

Firstly, we carry out the following robustness checks, still considering the control threshold of 10% using the database comprising 381 banks.

The presence of troubled banks in our sample, i.e. observations for which risk-based capital ratios are below the regulatory minimum ratios, might affect our results in two ways. On the one hand, such banks might be more subject to extra pressure from both regulators and investors to increase their capital and thus feel the need to adjust more quickly. On the other hand, raising equity is especially costly for them and they might consequently be unable to adjust their capital. To focus on voluntary capital adjustment, we exclude from the initial sample observations for which the Tier 1 capital ratio (4 observations) and the total risk-based capital ratio (44 observations) are below the regulatory minimum capital ratios respectively 4% and 8%. The results are respectively shown in Tables A5 and A6. They are consistent with our previous general findings.

We further test the robustness of our results by estimating the fitted values of the target capital ratio using a perfect capital adjustment model instead of a partial capital adjustment model as specified in Equation (6). The perfect capital adjustment model[28], unlike the partial one, assumes the target capital ratio to be equal to the observed capital ratio at any time. This check leaves our conclusions unchanged (see Table A7).

As discussed above, our analysis is carried using a two-step procedure, i.e. the estimation of the target capital ratio (Equation (6)) and the asymmetries in capital adjustment speeds (Equation (5)). We combine these two steps and re-estimate the whole process in a one-step procedure. Our argument is as follows. When we estimate the target capital ratio $\left(\frac{K}{A}\right)_{it}^{*}$ as specified in Equation (6), we find that the coefficients β (at least some of them) are significantly different from zero. Furthermore, the coefficient associated to the lagged variable[29] $(1-\gamma)$ (the complement of the adjustment speed) is significant whatever the definition we retain for the capital ratio (T1TA or T1RWA). This suggests that European commercial banks operate with a target capital ratio and adjust a proportion γ each year to

[28] We specify the following model: $\left(\frac{K}{A}\right)_{it}^{*} = \phi_i + \sum_{j=1}^{J} \beta_j x_{jit} + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \eta_{it}$, where x_{jit} is the same set of variables as those used to estimate Equation (6). The Hausman test fails to reject the null hypothesis of the exogeneity of the regressors. Hence, we estimate this model using Random effect GLS estimator with robust standards errors.

[29] The coefficient estimates on the determinants of the bank optimal capital ratio are the product of the adjustment speed γ and the variable's contribution (β) to the bank's optimal capital ratio (see Equation (6)). Hence, to get the parameter value of the contribution of each variable that is β, we divide the estimated regression coefficient for that variable by the adjustment speed γ. To test the statistical significance of the obtained βs, we use the Wald test.

reach this target capital ratio $\left(\frac{K}{A}\right)^*_{it}$. Given this finding, we assume that the actual deviation (ADE_{it}) has always the same sign as the target deviation[30] (TDE_{it}). Based on this assumption, we re-define the dummy variable $BELOW_{it-1}$ based on the observed capital ratio instead of the target capital ratio. Hence the variable $BELOW_{it-1}$ is now a dummy variable that takes the value of one if the lagged value of the bank capital ratio $\left(\frac{K}{A}\right)_{it-1}$ is below the current capital ratio $\left(\frac{K}{A}\right)_{it}$. The main results[31] obtained using a one-step procedure are robust to those previously obtained (see Table A8).

We also check the robustness of our results by using Generalized Moments Method (GMM) as an alternative method to estimate Equation (5) as well as the specifications used in section 4.2. for deeper investigations. This check is motivated by the fact that our explanatory variable TDE_{it} is a fitted value and not an observed one. Hence, our coefficient estimates λ, θ, λ' and θ' associated to this variable might suffer from error measurement bias. To overcome this problem and ensure that our estimates are not biased, we re-estimate the equation used in the second step estimation (Equation (5) as well as all the other equations used either on subsamples of banks with and without a wedge and in our deeper investigations in section 4.2.) using (Blundell and Bond 1998) dynamic panel estimator[32]. Considering this alternative estimation method leads to similar conclusions (see Table A9).

As previously defined, our sample includes controlled and widely-held banks. As a robustness check, we focus on the sample of controlled banks, i.e. we exclude from the initial sample widely-held banks (corresponding to 279 observations). Widely-held banks might behave differently than banks controlled by a shareholder without a wedge. This again leads to similar conclusions (see Table A10).

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[30] We compute the ratio of $ADE_{it}/\widehat{TDE_{it}}$. The statistics show that this ratio is positive in 99% of the cases meaning that in 99% of the cases, ADE_{it} and $\widehat{TDE_{it}}$ have the same sign. In other words, in 99% of the cases, European commercial banks change their capital in the same direction as the required change.

[31] We estimate the following equation:

$$ADE_{it} = \mu_i + \lambda \sum_{j=1}^{J} \beta_j x_{jit} + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t - (\lambda + \theta\, BELOW_{it-1} + \lambda'\, W_{it} + \theta'\, BELOW_{it-1}\, W_{it}) \frac{\widetilde{K}_{it-1}}{A_{it}} + \epsilon_{it}$$

Given the minus sign included in this specification, the coefficients λ, θ, λ' and θ' have to be interpreted as their opposites ($-\lambda$, $-\theta$, $-\lambda'$and $-\theta'$).

[32] We favor this estimator to first differencing because the model as specified in Equation (5) or in any equation estimated on subsamples or used for deeper investigations (section 4.2.), includes time-invariant variables (country fixed effects). We limit the number of instruments by restricting the lag range (used in generating them) to one. We apply GMM instruments on the following explanatory variables: $\widehat{TDE_{it}}$, $\widehat{BELOW}_{it-1} \times \widehat{TDE_{it}}$, $W_{it} \times \widehat{TDE_{it}}$, $\widehat{BELOW}_{it-1} \times W_{it} \times \widehat{TDE_{it}}$. The remaining variables are considered as strictly exogenous. We check the validity of our instruments using AR2 test (absence of serial correlation) and the Hansen test (exogeneity of all instruments as a group) reported at the bottom of Table A9.

We further investigate the robustness of our results by excluding from the initial sample banks controlled by more than one largest shareholder (corresponding to 424 observations). The ability and the incentives of controlling shareholders to expropriate and thus to protect their position might be different in the absence and the presence of multiple controlling shareholders. The second largest shareholder could monitor the largest one and impede her/his tendency to extract private benefits of control. In such a case, curbing external recapitalization to protect the controlling power might be less of concern. If, however, the second largest shareholder colludes with the largest one to form a coalition and render expropriation more efficient, the reluctance to adjust the capital ratio through new equity issues might be more pronounced. This check leads again to similar results (see Table A11).

Banks controlled by a widely-held financial or non-financial corporation can be classified as widely-held banks and not as controlled banks as previously defined. Thus, as a robustness test, we change the control classification criterion. A bank is classified as a controlled bank if the controlling shareholder is an independent category, i.e. a family, a state or a manager (this corresponds to 532 observations). Our main results remain unchanged (see Table A12).

Secondly, we change the control threshold and re-estimate all the regressions considering this new control level, i.e. we use a larger sample of 405 banks. We recalculate ownership variables considering a control level of 20% instead of 10%. This new minimum control threshold changes our database both quantitatively and qualitatively (see Table 3). First, we add some of the banks for which we fail to follow the track until the ultimate owner when we use a 10% control level. Accordingly, 24 banks[33] are added to our sample reaching 405 banks corresponding to 1906 observations. In addition, the structure of the initial sample as well as the nature of the ultimate owner has changed. Considering this new control threshold gives similar results for all our specifications including the ones in section 4.2. (see Table A13).

We also check the robustness of our results by performing further estimations using this new control threshold (20%). We consider the following checks that were discussed and performed above for the 10% threshold: (1) eliminating banks above the minimum regulatory capital ratios (4% and 8%); (2) estimating the target capital ratio using a perfect adjustment model; (3) estimating regressions in a one-step procedure; (4) focusing on the sample of controlled-banks; (5) focusing on banks controlled by one largest shareholder and (6) banks

[33] We are not able to end the process for 28 banks when we consider the 10% control threshold and for 4 banks with the 20% threshold.

controlled by an independent ultimate owner are considered as widely-held. In all cases, our main results -not reported here and available upon request- remain unchanged.

5. Conclusion and Policy Implications

The purpose of this study is to empirically test whether bank ownership characteristics, more precisely the divergence between voting and cash-flow rights affect the bank's capital adjustment behavior. We specifically question whether banks with and without divergence between voting and cash-flow rights behave differently when they face a shortage or a surplus in capital to adjust to the target equity capital ratio. For this purpose, we assemble a novel hand-collected dataset on bank ultimate control and ownership structure and work on an unbalanced panel of 405 commercial banks across 17 European countries from 2003 to 2010.

On the whole, the results confirm the conjecture that the bank's decision to move to the target capital ratio is different for banks controlled by a shareholder with or without a divergence between voting and cash-flow rights. On the one hand, when there is no divergence between both rights, banks equally adjust their equity capital upwards and downwards to move closer their target capital ratio. Such banks do not appear to fear control dilution. On the other hand, when there is divergence between voting and cash-flow rights, banks differently weigh the need to increase or decrease external capital (equity). They are reluctant to issue equity to adjust their equity capital upwards to reach the target level but inclined to adjust it downwards. Moreover, such banks are found to counterbalance their reluctance to issue equity by using internal resources (earnings). Our findings suggest that controlling shareholders with divergence between both rights curb recapitalization to preserve their controlling position and encourage equity repurchase to strengthen their voting power. Further investigation shows that the reluctance to issue new equity to adjust to the target level holds only if the shareholder is a family or a state or when the bank is headquartered in a country with weak shareholder protection. However, such a behavior tends to be tempered during the 2008 financial crisis due either to regulatory capital injections received during the financial crisis or fund transfers within the pyramid from one entity to the other (propping up) by ultimate owners.

Our findings have several policy implications. We show that during the 2003-2010 period covered by the Basel I and II accords, European banks with and without divergence between voting and cash-flow rights of the ultimate owner behave differently when they adjust their

Tier 1 regulatory capital to move to the target level. Consequently, it is important for regulators and supervisors to consider that imposing more stringent capital requirements, particularly by narrowing the definition of Tier 1 capital to ordinary shares, might impact banks differently depending on their ownership pattern. According to our results, banks controlled by a shareholder with divergence between both rights are reluctant to raise equity that may dilute the voting power. Consequently, we presume that their propensity to adjust their Tier 1 capital ratio through alternative methods (i.e. reduce their dividend payment or proceed to downward adjustment in asset size or risk-weighted assets) might be higher under Basel III schemes because such banks will need to issue ordinary shares which, unlike preferred shares (in general carrying only cash-flow rights), might dilute the voting rights of the controlling shareholder. Hence, credit crunch phenomena are more likely to occur in the transition from Basel II to Basel III which is expected to be completed in 2019. Such banks should be closely monitored by regulators and supervisors. A better disclosure of banks' ownership structures following the recommendations of the Basel Committee on Banking Supervision (BIS, 2010b) should be encouraged to improve regulatory but also market monitoring and discipline. Increasing the level of shareholder protection is also a solution to temper the aversion of controlling shareholders to external recapitalization (equity issues).

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Table 1. Distribution of European Commercial Banks and Representativeness of the Sample (control threshold of either 10% or 20% of voting rights to define the largest shareholder)

Country	Banks available in Bankscope		Banks in the final sample					
			Control Threshold 10%			Control Threshold 20%		
	All	Listed	All	Listed	Percent [a]	All	Listed	Percent [a]
Austria	88	5	15	3	31.68	17	3	34.17
Belgium	50	2	9	0	98.32	9	0	98.32
Denmark	61	42	44	34	91.95	47	36	98.32
Finland	10	2	2	0	80.27	5	1	87.78
France	191	18	19	6	77.41	22	6	78.45
Germany	208	20	25	8	73.07	26	9	74.74
Greece	19	11	13	9	96.47	13	9	96.47
Ireland	35	5	12	4	94.67	12	4	94.67
Italy	188	27	110	17	83.12	113	17	86.29
Luxembourg	107	4	17	4	52.21	18	4	55.75
Netherlands	47	5	17	3	61.62	17	3	61.62
Norway	20	4	7	3	73.15	8	3	73.52
Portugal	27	5	11	2	84.70	11	2	84.70
Spain	92	17	16	9	90.87	16	9	90.87
Sweeden	25	2	12	2	83.02	13	2	83.32
Switzerland	182	7	12	2	86.11	14	3	87.21
United Kingdom	183	9	40	5	70.32	44	5	72.01
Total	1533	185	381	111	-	405	116	-

[a] Percentage of total assets of our sample banks in a given country to the aggregate total assets of all commercial banks provided by Bankscope in the same country over the 2003-2010 period.

Table 2. General Descriptive Statistics (control cutoff of either 10% or 20% of voting rights to define the largest shareholder), on average, over the 2003-2010 period

	TA	DEPTA	TFTA	LOTA	LLP	EQTA	TCR	T1RWA	ROA	ROE
Full sample of commercial banks available in Bankscope (1533 banks)										
Mean	25268.59	68.94	80.32	47.48	0.73	11.32	14.62	12.11	0.70	7.13
Med.	1037.50	75.48	87.20	50.76	0.35	7.89	12.80	10.16	0.52	6.60
Std.	120352.05	22.06	18.92	29.13	2.07	10.23	6.25	6.21	2.36	12.12
Min.	0.10	0.10	0.01	0.04	-19.23	0.61	0.10	0.10	-20.00	-59.74
Max.	2202423	94.99	96.99	96.00	17.81	60.00	42.00	39.92	20.00	60.00
Our sample of commercial banks using a control cutoff of 10% (381 banks)										
Mean	88770.23	65.41	87.08	58.05	0.70	7.66	13.70	11.49	0.58	7.81
Med.	7399.72	68.44	88.50	63.16	0.48	6.53	12.40	9.90	0.53	8.70
Std.	242228.20	18.72	7.36	23.62	1.23	4.76	5.01	5.39	0.87	11.01
Min.	35.90	0.11	2.19	0.05	-19.23	0.85	3.12	2.05	-5.70	-58.79
Max.	2202423	94.88	96.96	96	9.86	40.38	41.86	39.71	9.75	54.64
Observations	1784	1772	1762	1784	1784	1783	1743	1784	1784	1784
Our sample of commercial banks using a control cutoff of 20% (405 banks)										
Mean	84940.95	65.38	87.06	57.63	0.73	7.78	13.84	11.63	0.55	7.44
Med.	7027.40	68.46	88.60	62.85	0.47	6.54	12.46	10.00	0.52	8.49
Std.	235645.85	19.16	7.95	23.74	1.31	4.99	5.21	5.55	1.06	11.23
Min.	35.90	0.11	2.19	0.05	-19.23	0.66	3.12	2.05	-6.95	-59.19
Max.	2202423	94.88	96.96	96	11.72	40.38	42	39.71	16.63	54.64
Observations	1906	1895	1906	1874	1906	1904	1856	1899	1906	1896

Two thresholds of voting rights are used to build the control chains and identify the ultimate owner: 10% or 20%. All variables are expressed in percentages except TA which is in million Euros. TA is the bank's total assets. DEPTA is the ratio of total deposits (total customer deposits + bank deposits) to total assets. TFTA is the ratio of total funding (total deposits, money market and short term funding + total long term funding) to total assets. LOTA is the ratio of net loans to total assets. LLP is the ratio of loan loss provisions to net loans. EQTA is the ratio of total equity to total assets. TCR is the risk-based total capital ratio. T1RWA is the risk-based Tier 1 capital ratio. ROA is the return on assets. ROE is the return on equity.

Table 3. Ultimate ownership type of European Commercial Banks (control threshold of either 10% or 20% of voting rights to define the largest shareholder), on average for the years 2004, 2006 and 2010

	Control Threshold 10%						Control Threshold 20%					
	Full sample		VR=CFR		VR ≠ CFR		Full sample		VR=CFR		VR ≠ CFR	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
WIDELY	15.63 (279)	64	-	-	-	-	19.46 (371)	62	-	-	-	-
CONTROLLED	84.36 (1505)	350	56.47 (850)	215	43.52 (655)	177	80.54 (1535)	343	57.39 (881)	197	42.61 (654)	146
BANK	38.47 (579)	146	52.94 (450)	118	19.69 (129)	34	52.83 (811)	177	64.13 (565)	129	37.61 (246)	48
FAMILY	22.19 (334)	100	18.82 (160)	49	26.56 (174)	53	15.70 (241)	61	13.05 (115)	29	19.26 (126)	32
STATE	11.62 (175)	60	5.06 (43)	13	20.15 (132)	47	11.20 (172)	46	5.67 (50)	12	18.65 (122)	34
INSTIT	14.22 (214)	56	13.65 (116)	30	14.96 (98)	26	11.79 (181)	33	9.98 (88)	14	14.22 (93)	19
INDUST	5.58 (84)	21	3.06 (26)	6	8.85 (58)	16	4.95 (76)	13	3.74 (33)	6	6.57 (43)	7
MANAGER	1.53 (23)	7	0.82 (7)	2	2.44 (16)	5	-	-	-	-	-	-
OTHER	6.38 (96)	32	5.65 (48)	13	7.33 (48)	19	3.53 (54)	13	3.43 (30)	7	3.69 (24)	6

Two thresholds of voting rights are used to identify the largest controlling ultimate owner: 10% or 20%. We consider two subsamples: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR).

In columns (a), we report the percentage and the number of observations between brackets for each ownership category. In columns (b), we present the corresponding number of banks. WIDELY = bank widely-held; CONTROLLED = bank controlled by at least one shareholder; BANK = the largest ultimate owner is a bank; FAMILY = the largest ultimate owner is a family/individual; STATE = the largest ultimate owner is a state/public authority; INSTIT = the largest ultimate owner is either a financial company, an insurance company or a mutual/pension funds; INDUST = the largest ultimate owner is an industrial firm; MANAGER = the largest ultimate owner is a manager; OTHER = the largest ultimate owner is foundation/research institute, or the control chain is a cross-holding.

Table 4. Statistics on the voting rights, the cash-flow rights and the wedge (control threshold of either 10% or 20% of voting rights to define the largest shareholder), on average for the years 2004, 2006 and 2010

	Control Threshold 10%									Control Threshold 20%								
	Full sample			VR=CFR			VR ≠ CFR			Full sample			VR=CFR			VR ≠ CFR		
	VR	CFR	WEDGE	VR	CFR	WEDGE	VR	CFR	WEDGE	VR	CFR	WEDGE	VR	CFR	WEDGE	VR	CFR	WEDGE
Mean	61.41	46.02	15.40	67.27	67.27	0	79.97	19.01	60.96	64.76	51.49	13.28	55.30	55.30	0	82.88	44.18	38.69
Med.	71.05	44.06	0	74.24	74.24	0	98	17.72	62.89	78.75	50	0	55.37	55.37	0	98	39.55	39.06
Max.	100	100	99.41	100	100	0	100	99.74	99.41	100	100	90.36	100	100	0	100	99.99	90.36
Min.	0	0	0	0	0	0	10	0.09	0.00	0	0	0	0	0	0	20.81	2.73	0
Std.	38.90	37.53	27.31	33.07	33.07	0	26.61	28.99	30.30	38.73	38.13	25.12	41.47	41.47	0	24.11	29.44	29.26
Observations	1784	1784	1784	850	850	850	655	655	655	1906	1906	1906	1252	1252	1252	654	654	654

Two thresholds of voting rights are used to identify the largest controlling ultimate owner: 10% or 20%. We consider two subsamples: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR). VR is the average largest ultimate owner's voting rights. CFR is the average largest ultimate owner's cash-flow rights. WEDGE=VR-CFR, i.e. the average divergence between the largest ultimate owner's voting and cash-flow rights.

Table 5. General statistics of the main variables for the subsamples of banks with a wedge (VR=CFR) and without a wedge (VR ≠ CFR) (control threshold of 10% or 20% of voting rights to define the largest shareholder), on average over the 2003-2010 period

Variables	Observations	Sample VR=CFR					Sample VR ≠ CFR					T-test
		Mean	Med.	Std.	Min.	Max.	Mean	Med.	Std.	Min.	Max.	
Control Threshold 10% (sample of 381 banks)												
TA	1784	96524.14	6456.30	269973.80	35.90	2202423	75405.08	8578.10	184310.08	67.64	1967121.9	1.77[c]
LOTA	1784	55.64	63.93	22.29	2.74	95.96	59.45	60.49	25.58	0.05	96.00	-3.29[a]
ROA	1784	0.66	0.59	0.90	-3.13	9.75	0.45	0.45	0.79	-5.70	5.84	4.94[a]
ROE	1784	8.09	8.94	10.67	-58.79	46.16	7.33	8.40	11.57	-58.75	54.64	1.39
LLP	1784	0.70	0.50	0.94	-4.32	9.32	0.70	0.40	1.61	-19.23	9.86	-0.01
NPL	1328	3.59	2.35	3.82	0.00	36.54	4.18	2.54	5.89	0.03	64.04	-2.19[b]
DIV	1545	0.93	1.00	0.26	0.00	1.00	0.85	1.00	0.35	0.00	40.20	3.66[a]
TCR	1743	13.78	12.45	4.95	4.97	41.86	13.58	12.20	5.12	3.12	40.20	0.79
T1RWA	1784	11.68	10.10	5.45	3.21	39.71	11.17	9.60	5.27	2.05	37.40	1.92[b]
LISTED	1784	0.50	0.00	0.50	0.00	1.00	0.24	0.00	0.43	0.00	1.00	-
Control Threshold 20% (sample of 405 banks)												
TA	1906	93978.29	5885.20	258786.18	35.90	2202423	67640.10	8256.00	182314.71	67.64	1967121.9	2.32[b]
LOTA	1874	55.73	63.51	22.93	2.08	95.96	58.60	60.70	25.15	0.05	96.00	-2.48[b]
ROA	1906	0.64	0.58	1.13	-6.95	16.63	0.39	0.44	0.89	-5.70	5.84	4.86 [a]
ROE	1896	7.83	8.71	11.01	-59.19	47.67	6.69	8.07	11.61	-58.75	54.64	2.09[b]
LLP	1906	0.72	0.48	1.06	-4.32	9.32	0.75	0.43	1.70	-19.23	11.72	-0.41
NPL	1403	3.73	2.35	4.24	0.00	46.93	4.15	2.33	5.99	0.02	64.04	-1.51
DIV	1657	0.92	1.00	0.27	0.00	1.00	0.86	1.00	0.35	0.00	1.00	2.98[a]
TCR	1856	13.95	12.50	5.28	3.12	41.86	13.64	12.30	5.07	4.25	42.00	1.22
T1RWA	1899	11.90	10.35	5.67	2.05	39.71	11.10	9.60	5.27	3.97	37.40	2.97[a]
LISTED	1906	0.47	0.00	0.50	0.00	1.00	0.26	0.00	0.44	0.00	1.00	-

Two thresholds of voting rights are used to build the control chains and identify the ultimate owner: 10% or 20%. We consider two subsamples: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR).

All variables are expressed in percentages except TA which is in million euros. TA is the bank's total assets. LOTA is the ratio of net loans to total assets. ROA is the return on assets. ROE is the return on equity. LLP is the ratio of loan loss provisions to net loans. NPL is the ratio of non-performing loans to gross loans. DIV is a dummy variable that takes one if the bank pays dividends at time t, and zero otherwise. TCR is the risk-based total capital ratio. T1RWA is the risk-based Tier 1 capital ratio. LISTED is a dummy variable equal to one if the bank is listed, and zero otherwise. VR is the largest ultimate owner's voting rights. CFR is the largest ultimate owner's cash-flow rights. T-test is T-statistics for null hypothesis of identical means; a, b and c indicate significance at the 1%, 5% and 10% levels, respectively, for a bilateral test.

Table 6. Estimating the target capital ratio using a partial adjustment model for European Commercial Banks over the 2003-2010 period (Two-step system GMM estimator)

Model: $\left(\frac{K}{A}\right)_{it} = (1-\gamma)\left(\frac{K}{A}\right)_{it-1} + \gamma\sum_{j=1}^{J}\beta_j x_{jit} + \phi_i + \sum_{c=2}^{17}\alpha_c\delta_c + \sum_{t=2}^{8}\varphi_t\tau_t + \eta_{it}$

	Full sample				Subsamples			
	Baseline		Wedge differentiated target		Baseline for VR=CFR		Baseline for VR≠CFR	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$T1TA_{t-1}$	0.60[a]		0.59[a]	-	0.56[a]	-	0.68[a]	-
	(0.00)		(0.00)		(0.00)		(0.00)	
$T1RWA_{t-1}$	-	0.58[a]	-	0.58[a]	-	0.52[a]	-	0.64[a]
		(0.00)		(0.00)		(0.00)		(0.00)
W_{it}	-	-	-0.16[b]	-0.43[a]	-	-	-	-
			(0.02)	(0.00)				
$LnTA_{it}$	-0.26[a]	-0.68[a]	-0.19[a]	-0.59[a]	-0.31[b]	0.07	-0.07	-0.63[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.23)	(0.82)	(0.00)
ROA_{it}	0.66[a]	0.63[a]	0.48[b]	0.60[b]	0.65[a]	0.54[b]	0.45[b]	0.24[c]
	(0.00)	(0.00)	(0.03)	(0.02)	(0.00)	(0.03)	(0.04)	(0.06)
LLP_{it}	0.14[c]	-0.06	0.14	-0.12	0.16	0.00	0.02	-0.07
	(0.07)	(0.98)	(0.10)	(0.11)	(0.23)	(0.99)	(0.45)	(0.58)
$COSTEQ_{it}$	-0.33[b]	-0.13	-0.23[a]	-0.14	-0.23[a]	-0.20[c]	-0.30[b]	0.39
	(0.03)	(0.88)	(0.00)	(0.88)	(0.00)	(0.06)	(0.02)	(0.35)
CV_{it}	0.12[c]	0.13	0.09[c]	0.24[b]	0.22[c]	0.04	0.07	0.14[c]
	(0.10)	(0.10)	(0.10)	(0.05)	(0.07)	(0.59)	(0.59)	(0.06)
$LOTA_{it}$	0.00	-0.02[c]	0.00	-0.02[c]	0.01	-0.03[c]	-0.00	-0.06[a]
	(0.84)	(0.08)	(0.94)	(0.08)	(0.49)	(0.10)	(0.96)	(0.01)
$MKTDISC_{it}$	-0.00	0.03[b]	0.00	0.03[b]	0.01[c]	0.03[b]	-0.16	0.12[c]
	(0.71)	(0.02)	(0.89)	(0.04)	(0.09)	(0.01)	(0.37)	(0.06)
$GDPG_{it}$	0.03[c]	0.02	0.02[c]	0.01	0.03[c]	0.03	-0.02	0.06
	(0.07)	(0.59)	(0.08)	(0.85)	(0.07)	(0.65)	(0.37)	(0.29)
$LISTED_{it}$	0.42[c]	1.10[c]	0.38	1.06[b]	0.32	-0.20	0.37[c]	1.08[b]
	(0.09)	(0.09)	(0.09)	(0.02)	(0.18)	(0.72)	(0.05)	(0.03)
$UCAP_{it}$	-0.45	0.37	-0.20	0.28	-	-	-0.53	0.47
	(0.55)	(0.41)	(0.85)	(0.37)			(0.26)	(0.16)
$ACAP_{it}$	-0.21	-0.21	-0.19	-0.16[c]	0.15	0.05	-0.35[c]	-0.33[c]
	(0.57)	(0.42)	(0.58)	(0.10)	(0.23)	(0.54)	(0.11)	(0.09)
INTERCEPT	3.19[c]	8.20[b]	2.37[a]	8.28[b]	3.76[c]	4.22[b]	0.33[c]	7.21[b]
	(0.09)	(0.03)	(0.00)	(0.02)	(0.06)	(0.02)	(0.08)	(0.02)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1127	1312	1127	1312	738	821	354	447
Hansen Stat	79.19	143.34	101.82	144.90	104.13	135.72	38.61	86.72
Hansen (P-Value)	0.13	0.30	0.17	0.19	0.13	0.25	0.80	0.52
AR2 Stat	-1.96	-1.56	-2.00	-1.55	-1.86	-2.24	-0.26	0.99
AR2 (P-Value)	0.50	0.12	0.46	0.12	0.63	0.25	0.80	0.32

Subsamples are defined as follows: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR).

Variables definition: the dependent variable is either the non-weighted Tier 1 capital ratio (T1TA) or the risk-based Tier 1 capital ratio (T1RWA). See Table A1 in Appendix for the definition of the explanatory variables. The reported coefficient estimates on the determinants of the bank capital ratio are the product of the adjustment speed γ and the variable's contribution (β) to the bank's target capital ratio. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table 7. Impact of the wedge on capital adjustment speed (GLS estimation with RS Errors)

Model: $ADE_{it} = \left(\lambda + \theta \widehat{BELOW}_{it-1} + \lambda' W_{it} + \theta' \widehat{BELOW}_{it-1} W_{it}\right)\widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.40[a]	0.41[a]	0.42[a]	0.40[a]	0.45[a]	0.41[a]	0.42[a]	0.40[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.04	0.03	0.02	0.03	0.06	0.04	0.02	0.03
	(0.41)	(0.63)	(0.59)	(0.51)	(0.53)	(0.21)	(0.22)	(0.52)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.03	0.01	0.00	0.03	0.06	0.10	0.05	0.04
	(0.26)	(0.44)	(0.29)	(0.39)	(0.39)	(0.11)	(0.38)	(0.29)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.41[a]	-0.40[a]	-0.34[a]	-0.38[a]	-0.30	-0.29[c]	-0.16[c]	-0.19[c]
	(0.00)	(0.00)	(0.01)	(0.00)	(0.10)	(0.07)	(0.05)	(0.07)
INTERCEPT	0.19[a]	0.12	0.19[c]	0.19[c]	0.31[a]	0.16[c]	0.27[a]	0.22[c]
	(0.00)	(0.32)	(0.07)	(0.06)	(0.00)	(0.08)	(0.00)	(0.08)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1124	1119	1124	1119	1123	1121	1123	1121
R2	0.17	0.25	0.15	0.25	0.20	0.20	0.19	0.20
Fitted target: Mean	6.70	11.22	6.71	11.23	6.70	11.22	6.71	11.23
Maximum	21.94	33.45	23.12	33.57	21.94	33.45	23.12	33.57
Minimum	0.67	3.51	0.68	3.43	0.67	3.51	0.68	3.43
$\lambda + \theta + \lambda' + \theta' = 0$	0.06	0.05	0.09	0.08	0.27	0.26	0.33	0.28
Wald test (p-value)	0.58	0.44	0.29	0.25	0.02	0.02	0.00	0.01

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)^{*}_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)^{*}_{it}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the augmented baseline columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table 8. Impact of the wedge on capital adjustment speed: regressions using subsamples of banks with and without a wedge (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta\, \widehat{BELOW}_{it-1})\, \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	VR=CFR		VR≠CFR		VR=CFR		VR≠CFR	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.40[a]	0.41[a]	0.45[a]	0.44[a]	0.44[a]	0.39[a]	0.45[a]	0.46[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.07	0.06	-0.39[a]	-0.37[a]	0.06	0.09	-0.19	-0.23
	(0.69)	(0.67)	(0.00)	(0.00)	(0.66)	(0.28)	(0.17)	(0.14)
INTERCEPT	0.10	0.16[c]	0.13[b]	0.13	0.11	0.14[c]	0.18[c]	0.20[c]
	(0.46)	(0.07)	(0.02)	(0.15)	(0.36)	(0.06)	(0.06)	(0.07)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	737	735	352	351	736	735	352	351
R2	0.17	0.27	0.24	0.28	0.19	0.16	0.23	0.23
Fitted target: Mean	7.21	11.56	5.57	10.96	7.21	11.56	5.57	10.96
Maximum	21.56	31.52	22.45	29.15	21.56	31.52	22.45	29.15
Minimum	0.87	5.19	0.45	3.37	0.87	5.19	0.45	3.37
$\lambda + \theta$			0.06	0.07				
Wald test (p-value)			0.51	0.45				

Subsamples are defined as follows: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR).

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table 9. Impact of the wedge on capital adjustment speed: the largest owner's type (GLS estimation with RS Errors)

Model: $\mathrm{ADE_{it}} = (\lambda + \theta \widehat{\mathrm{BELOW}}_{it-1} + \lambda' \mathrm{FS_{it}} + \theta' \widehat{\mathrm{BELOW}}_{it-1}\ \mathrm{FS_{it}})\ \widehat{\mathrm{TDE}}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	$\mathrm{ADE_{it}}$							
	External change in capital				External and internal changes in capital			
	VR=CFR		VR≠CFR		VR=CFR		VR≠CFR	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{\mathrm{TDE}}_{it}$ (λ)	0.49[a]	0.41[a]	0.47[a]	0.47[a]	0.47[a]	0.45[a]	0.55[a]	0.49[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{\mathrm{TDE}}_{it} \times \widehat{\mathrm{BELOW}}_{it-1}$ (θ)	0.05	0.06	-0.16	-0.19	0.05	0.07	-0.19	-0.15
	(0.14)	(0.31)	(0.17)	(0.22)	(0.63)	(0.35)	(0.21)	(0.19)
$\widehat{\mathrm{TDE}}_{it} \times \mathrm{FS_{it}}$ (λ')	0.04	0.03	0.01	0.02	0.04	0.06	0.00	0.01
	(0.41)	(0.60)	(0.49)	(0.25)	(0.34)	(0.54)	(0.92)	(0.76)
$\widehat{\mathrm{TDE}}_{it} \times \widehat{\mathrm{BELOW}}_{it-1} \times \mathrm{FS_{it}}$ (θ')	-0.02	-0.01	-0.28[a]	-0.27[a]	-0.08	-0.12	-0.16[c]	-0.11[c]
	(0.50)	(0.44)	(0.00)	(0.00)	(0.39)	(0.26)	(0.09)	(0.09)
INTERCEPT	0.05	0.19[c]	0.05[c]	0.14	0.07	0.20[c]	0.16[b]	0.20[a]
	(0.21)	(0.07)	(0.10)	(0.10)	(0.24)	(0.10)	(0.04)	(0.00)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	737	735	352	351	736	735	352	351
R2	0.19	0.29	0.21	0.24	0.19	0.17	0.23	0.22
Fitted target: Mean	7.21	11.56	5.57	10.96	7.21	11.56	5.57	10.96
Maximum	21.56	31.52	22.45	29.15	21.56	31.52	22.45	29.15
Minimum	0.87	5.19	0.45	3.37	0.87	5.19	0.45	3.37
$\lambda + \lambda' + \theta + \theta'$	0.47	0.49	0.04	0.03	0.48	0.46	0.20	0.24
Wald test (p-value)	0.00	0.00	0.75	0.77	0.00	0.00	0.03	0.02

Sub-samples are defined as follows: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR).

Variables definition: $\mathrm{ADE_{it}} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{\mathrm{TDE}}_{it} = \left(\frac{\hat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. $\widehat{\mathrm{BELOW}}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. $\mathrm{FS_{it}}$ is a dummy variable equal to one if the largest ultimate shareholder is a family or a state, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table 10. Impact of the wedge on capital adjustment speed: level of shareholder protection (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta \widehat{BELOW}_{it-1} + \lambda' \ SPR_c + \theta' \widehat{BELOW}_{it-1} \ SPR_c) \ \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	VR=CFR		VR≠CFR		VR=CFR		VR≠CFR	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.46[a]	0.43[a]	0.46[a]	0.45[a]	0.46[a]	0.44[a]	0.52[a]	0.49[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.02	0.03	-0.43[a]	-0.44[a]	0.05	0.06	-0.25[b]	-0.20[c]
	(0.17)	(0.29)	(0.00)	(0.00)	(0.35)	(0.42)	(0.02)	(0.09)
$\widehat{TDE}_{it} \times SPR_c$ (λ')	0.01	0.00	0.03	0.02	0.02	0.08	0.03	0.04
	(0.32)	(0.82)	(0.32)	(0.37)	(0.39)	(0.58)	(0.39)	(0.56)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times SPR_c$ (θ')	0.02	0.01	0.15[b]	0.12[b]	-0.01	-0.08	0.02	0.02
	(0.41)	(0.55)	(0.03)	(0.01)	(0.45)	(0.43)	(0.47)	(0.34)
INTERCEPT	0.05	0.19[c]	0.08[b]	0.17[c]	0.23[a]	0.24[a]	0.08	0.18[c]
	(0.21)	(0.07)	(0.03)	(0.08)	(0.00)	(0.00)	(0.87)	(0.07)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	737	735	352	351	736	735	352	351
R2	0.19	0.30	0.22	0.27	0.18	0.17	0.28	0.22
Fitted target: Mean	7.21	11.56	5.57	10.96	7.21	11.56	5.57	10.96
Maximum	21.56	31.52	22.45	29.15	21.56	31.52	22.45	29.15
Minimum	0.87	5.19	0.45	3.37	0.87	5.19	0.45	3.37
$\lambda + \theta$			0.03	0.01				
Wald test (p-value)			0.58	0.75				

Subsamples are defined as follows: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR).

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\widehat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\widehat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. SPR_c is a dummy variable equal to one if the shareholder protection index is greater than the country-median, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table 11. Impact of the wedge on capital adjustment speed: the 2008 financial crisis (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta \widehat{BELOW}_{it-1} + \lambda' CRS_{it} + \theta' \widehat{BELOW}_{it-1}\, CRS_{it})\, \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	VR=CFR		VR≠CFR		VR=CFR		VR≠CFR	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.48[a]	0.43[a]	0.52[a]	0.50[a]	0.47[a]	0.46[a]	0.54[a]	0.50[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.03	0.02	-0.42[a]	-0.41[a]	0.03	0.01	-0.23[c]	-0.25[b]
	(0.15)	(0.33)	(0.00)	(0.00)	(0.52)	(0.37)	(0.10)	(0.03)
$\widehat{TDE}_{it} \times CRS_{it}$ (λ')	-0.27[a]	-0.18[b]	-0.26[a]	-0.28[b]	-0.19[a]	-0.20[b]	-0.28[b]	-0.27[a]
	(0.00)	(0.04)	(0.00)	(0.04)	(0.00)	(0.04)	(0.04)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times CRS_{it}$ (θ')	0.19	0.17[c]	0.40[b]	0.47[b]	0.12[c]	0.10	0.18	0.21
	(0.11)	(0.06)	(0.02)	(0.04)	(0.07)	(0.10)	(0.91)	(0.63)
INTERCEPT	0.05	0.12[c]	0.08	0.12[c]	0.09	0.19[c]	0.12[b]	0.22[b]
	(0.23)	(0.07)	(0.16)	(0.08)	(0.27)	(0.06)	(0.05)	(0.07)
Number of observations	737	735	352	351	736	735	352	351
R2	0.23	0.29	0.21	0.24	0.22	0.16	0.26	0.21
Fitted target: Mean	7.21	11.56	5.57	10.96	7.21	11.56	5.57	10.96
Maximum	21.56	31.52	22.45	29.15	21.56	31.52	22.45	29.15
Minimum	0.87	5.19	0.45	3.37	0.87	5.19	0.45	3.37
$\lambda + \theta$			0.10	0.09			0.31	0.25
Wald test (p-value)			0.12	0.25			0.00	0.02
$\lambda + \lambda'$	0.21	0.25	0.24	0.22	0.28	0.25	0.26	0.23
Wald test (p-value)	0.04	0.08	0.11	0.10	0.04	0.08	0.10	0.09
$\lambda + \lambda' + \theta + \theta'$		0.44	0.30	0.28	0.43	0.37	0.15	0.19
Wald test (p-value)		0.00	0.00	0.00	0.00	0.00	0.12	0.10

Subsamples are defined as follows: banks without a wedge, i.e. with equal voting and cash-flow rights (VR=CFR) and with a wedge, i.e. with divergence between both rights (VR≠CFR).

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. CRS_{it} is a dummy variable equal to one if the observation is from 2008 or 2009, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels. Both country and time dummies are included but not reported.

APPENDIX

Table A1. Description of the variables used to estimate the target capital ratio (Equation (6)), on average over the period 2003-2010.

Variable	Description	Expected sign	Authors	Mean	std	Min	Max	N
T1RWA	Risk-based Tier 1 capital ratio		(Berger et al. 2008)	11.49	5.39	2.05	39.71	1784
T1TA	Non-risk based Tier 1 capital ratio		(Berger et al. 2008)	6.81	4.00	0.09	28.62	1567
LnTA	Natural logarithm of total assets	Negative (-)	(Brewer et al. 2008), (Gropp and Heider 2011)	8.98	2.36	3.58	14.61	1784
W	Dummy variable equal to one if the wedge is not null, and zero otherwise	Negative (-)	(Brewer et al. 2008)	0.37	0.48	0.00	1.00	1784
ROA	Net income to total assets ratio	Ambiguous **(+/-)**	(Flannery and Rangan 2008), (Marcus 1983), (Ayuso et al. 2004), (Gropp and Heider 2011)	0.58	0.87	-5.70	9.75	1784
LLP	Loan loss provisions to net loans ratio	Ambiguous **(+/-)**	(Ayuso et al. 2004), (Nier and Baumann 2006), (Gropp and Heider 2011).	0.70	1.23	-19.23	9.86	1784
COSTEQ	Net income to equity ratio	Ambiguous **(+/-)**	(Ayuso et al. 2004), (Berger et al. 1995), (Nier and Baumann 2006)	7.81	11.01	-58.79	54.64	1784
CV	Charter value defined as the ratio of bank deposits in total deposits of all banks in a given country	Ambiguous **(+/-)**	(Fonseca and González 2010), (Gropp and Heider 2011), (Berger et al. 2008)	6.37	12.69	0.00	73.04	1784
LOTA	Net loans to total assets ratio	Negative (-)	(Ayuso et al. 2004)	58.05	23.62	0.05	96.00	1784
MKTDISC	Market discipline variable defined as total long term market funding to total funding ratio	Positive (+)	(Nier and Baumann 2006)	19.22	16.99	0.01	92.70	1588
GDPG	Real Growth Domestic Product	Ambiguous **(+/-)**	(Ayuso et al. 2004), (Jokipii and Milne 2008), (Nier and Baumann 2006), (Berger et al. 1995)	0.77	2.71	-5.33	6.64	1784
LISTED	Dummy equal to one if the bank is listed, and 0 otherwise	Ambiguous **(+/-)**	(Shehzad et al. 2010)	0.41	0.49	0.00	1.00	1784
UCAP	Dummy equal to one if Tier 1 risk based capital ratio is lower or equal to 4%, and 0 otherwise	Negative (-)	(Rime 2001), (Jokipii and Milne 2011), (Jacques and Nigro 1997)	0.00	0.06	0.00	1.00	1784
ACAP	Dummy equal to one if Tier 1 risk based capital ratio is between 4 and 7%, and 0 otherwise	Negative (-)	(Rime 2001), (Jokipii and Milne 2011), (Jacques and Nigro 1997)	0.14	0.35	0.00	1.00	1784

Table A2. Correlation matrix of the explanatory variables used to estimate the target capital ratio (Equation (6))

	LnTA	LOTA	ROA	COSTEQ	LLP	MKTDISC	CV	GDPG	LISTED	UCAP	ACAP	W
LnTA	1.00											
LOTA	-0.14	1.00										
ROA	-0.11	0.04	1.00									
COSTEQ	0.13	-0.03	0.77	1.00								
LLP	-0.07	0.07	-0.21	-0.22	1.00							
MKTDISC	0.12	0.28	-0.07	0.00	-0.05	1.00						
CV	0.64	-0.13	-0.03	0.12	-0.08	-0.01	1.00					
GDPG	0.05	-0.02	0.21	0.25	-0.27	0.00	0.14	1.00				
LISTED	0.22	0.08	0.12	0.09	0.02	-0.03	0.26	0.11	1.00			
UCAP	0.02	0.06	-0.02	-0.02	-0.05	0.00	0.01	0.00	-0.01	1.00		
ACAP	0.13	0. 19	-0.07	0.00	0.01	0.11	0.04	-0.06	0.00	-0.02	1.00	
W	0.08	-0.08	-0.12	-0.03	0.00	-0.04	-0.03	0.02	-0.26	0.06	0.01	1.00

LnTA is the natural logarithm of bank's total assets. LOTA is the ratio of net loans to total assets. ROA is profitability measured by the return on assets. COSTEQ is the opportunity cost of equity measured by the return on equity. LLP is the ratio of loan loss provisions to net loans. MKTDISC is the ratio of total long term funding to total funding. CV is the bank's charter value measured as the ratio of bank deposits to total deposits of all banks in a given country. GDPG is the real gross domestic product growth. Listed is a dummy variable equal to one if the bank is listed, and zero otherwise. UCAP is a dummy variable equal to one if the risk-based Tier 1 capital ratio is less than or equal to 4, and zero otherwise. W is a dummy variable equal to one if the wedge is not null, and zero otherwise.

Table A3: Summary statistics on the variables used in Equation (5), on average over the 2003-2010 period

	Variable	Definition	N	Mean	Med	Std	Min	Max
Actual capital ratio	$\left(\frac{K}{A}\right)_{it}$	The book value of Tier 1 capital divided by total assets at time t.	1567	6.81	5.78	4.00	0.09	28.61
		The book value of Tier 1 capital divided by risk-weighted assets at time t.	1784	11.49	9.90	5.39	2.05	39.71
Target capital ratio	$\left(\frac{\widehat{K}}{A}\right)_{it}^{*}$	The fitted target capital ratio measured as Tier 1 regulatory capital divided by total assets both measured at time t.	1127	6.71	5.85	3.47	0.70	23.05
		The fitted target capital ratio measured as Tier 1 regulatory capital divided by risk-weighted assets both measured at time t.	1312	11.22	9.99	4.23	3.44	33.53
Model's starting point	$\frac{K_{it-1}}{A_{it}}$	The lagged value of Tier 1 capital divided by total assets at time t.	1542	6.30	5.32	3.84	0.07	28.60
		The lagged value of Tier 1 capital divided by risk-weighted assets at time t.	1505	10.58	9.12	5.25	1.41	40.00
	$\frac{K_{it-1} + NI_{it} - DIV_{it}}{A_{it}}$	The lagged value of Tier 1 capital plus the net income minus the dividend payment both measured at time t, all divided by total assets at time t.	1542	6.71	5.64	4.14	0.10	29.95
		The lagged value of Tier 1 capital plus the net income minus the dividend payment both measured at time t, all divided by risk-weighted assets at time t.	1505	11.09	9.65	5.36	0.47	39.78
Target Deviation	$\widehat{TDE}_{it} = \left(\frac{\widehat{K}}{A}\right)_{it}^{*} - \frac{K_{it-1} + NI_{it} - DIV_{it}}{A_{it}}$	The target deviation corresponding to the required change in external capital to move to the target level. A_{it} is measured by total assets.	1127	0.20	0.14	1.21	-7.81	5.97
		The target deviation corresponding to the required change in external capital to move to the target level. A_{it} is measured by risk-weighted assets.	1124	0.18	0.27	2.40	-10.84	9.49

Table A3 (Continued)

	$\widehat{TDE}_{it} = \left(\frac{\widehat{K}}{A}\right)_{it}^{*} - \frac{K_{it-1}}{A_{it}}$	The target deviation corresponding to the required change in external and internal capital to move to the target level. A_{it} is measured by total assets.	1127	0.57	0.54	1.17	-7.59	6.62
		The target deviation corresponding to the required change in external and internal capital to move to the target level. A_{it} is measured by risk-weighted assets.	1124	0.73	0.86	2.16	-11.66	7.77
Actual deviation	$ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{K_{it-1} + NI_{it} - DIV_{it}}{A_{it}}$	The actual deviation arising from only the external change in bank capital. A_{it} is measured by total assets.	1506	0.14	-0.01	1.33	-8.74	12.36
		The actual deviation arising from only the external change in bank capital. A_{it} is measured by risk-weighted assets.	1505	0.20	-0.02	2.23	-12.61	18.31
	$ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{K_{it-1}}{A_{it}}$	The actual deviation arising from both the internal and external changes in bank capital. A_{it} is measured by total assets.	1506	0.51	0.34	1.20	-7.83	8.00
		The actual deviation arising from both the internal and external changes in bank capital. A_{it} is measured by risk-weighted assets.	1505	0.78	0.58	2.07	-10.85	15.94
Capital ratio position	$\widehat{BELOW}_{it-1}$	Takes a value 1 if the lagged value of non-risk based Tier 1 capital ratio (T1TA) is below its target level.	1127	0.52	1	0.49	0	1
		Takes a value 1 if the lagged value of risk-based Tier 1 capital ratio (T1RWA) is below its target level.	1312	0.61	1	0.49	0	1

Table A4. Loans of European commercial banks

Country	Commercial Banks available in Bankscope	Commercial Banks in the final sample (381 banks)			
		Banks with a wedge		Banks without a wedge	
	Loans [a]	Loans [a]	Per cent [b]	Loans [a]	Per cent [b]
Austria	131550.80	21454.89	0.16	29040.48	0.22
Belgium	514323.90	445577.09	0.87	63650.83	0.12
Denmark	477270.00	394232.14	0.83	44727.45	0.09
Finland	105520.10	83157.88	0.79	184.27	0.00
France	1649908.00	545681.05	0.33	769708.36	0.47
Germany	1350270.00	719554.39	0.53	209164.20	0.15
Greece	202621.80	93066.05	0.46	102861.95	0.51
Ireland	444870.70	1590.48	0.00	446800.36	1.00
Italy	1900353.00	679888.37	0.36	964233.78	0.51
Luxembourg	159875.90	73036.14	0.46	34944.70	0.22
Netherlands	1347776.00	394729.16	0.29	500981.22	0.37
Norway	181535.50	126625.49	0.70	2923.40	0.02
Portugal	138297.50	7963.75	0.06	107902.20	0.78
Spain	1330837.00	274207.22	0.21	944216.41	0.71
Sweeden	286477.20	470.35	0.00	231430.02	0.81
Switzerland	544670.60	11623.94	0.02	388547.82	0.71
United Kingdom	2900402.00	1974273.54	0.68	428936.23	0.15
Total	13666560.00	5847131.95	0.43	5270253.66	0.39

a is the amount of loans expressed in million Euros.

b is the proportion of loans of sample commercial banks with or without a wedge in a given country to total loans of all commercial banks provided in Bankscope in the same country.

Table A5. Excluding banks below the regulatory minimum Tier 1 capital ratio (4%) (GLS estimation with RS Errors)

Model: $\mathrm{ADE}_{it} = (\lambda + \theta \widehat{\mathrm{BELOW}}_{it-1} + \lambda' W_{it} + \theta' \widehat{\mathrm{BELOW}}_{it-1} W_{it}) \widehat{\mathrm{TDE}}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{\mathrm{TDE}}_{it}$ (λ)	0.42[a]	0.41[a]	0.42[a]	0.41[a]	0.44[a]	0.43[a]	0.44[a]	0.43[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{\mathrm{TDE}}_{it} \times \widehat{\mathrm{BELOW}}_{it-1}$ (θ)	0.02	0.02	0.02	0.03	0.03	0.04	0.02	0.03
	(0.41)	(0.66)	(0.43)	(0.64)	(0.36)	(0.19)	(0.33)	(0.21)
$\widehat{\mathrm{TDE}}_{it} \times W_{it}$ (λ')	0.03	0.03	0.02	0.03	0.04	0.05	0.04	0.04
	(0.30)	(0.48)	(0.29)	(0.29)	(0.35)	(0.16)	(0.37)	(0.19)
$\widehat{\mathrm{TDE}}_{it} \times \widehat{\mathrm{BELOW}}_{it-1} \times W_{it}$ (θ')	-0.41[a]	-0.39[a]	-0.40[a]	-0.39[a]	-0.24	-0.25[c]	-0.20[c]	-0.22[c]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.13)	(0.09)	(0.10)	(0.06)
INTERCEPT	0.16[a]	0.12	0.15[b]	0.11[c]	0.27[a]	0.23[b]	0.27[a]	0.21[b]
	(0.00)	(0.20)	(0.02)	(0.08)	(0.00)	(0.03)	(0.00)	(0.04)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1120	1115	1120	1115	1119	1117	1119	1117
R2	0.18	0.25	0.18	0.25	0.17	0.16	0.17	0.16
Fitted target: Mean	6.72	11.25	6.72	11.25	6.72	11.25	6.72	11.25
Maximum	22.83	33.71	23.07	33.78	22.83	33.71	23.07	33.78
Minimum	0.77	4.43	0.70	4.31	0.67	3.51	0.70	4.31
$\lambda + \theta + \lambda' + \theta'$	0.06	0.07	0.06	0.08	0.26	0.27	0.30	0.28
Wald test (p-value)	0.55	0.30	0.57	0.29	0.01	0.01	0.00	0.00

Variables definition: $\mathrm{ADE}_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{\mathrm{TDE}}_{it} = \left(\frac{\hat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{\mathrm{BELOW}}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A6. Excluding banks below the regulatory minimum total capital ratio (8%) (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta\, \widehat{BELOW}_{it-1} + \lambda'\, W_{it} + \theta'\, \widehat{BELOW}_{it-1}\, W_{it})\, \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.41[a]	0.41[a]	0.42[a]	0.41[a]	0.46[a]	0.44[a]	0.45[a]	0.45[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.03	0.03	0.03	0.04	0.05	0.03	0.05	0.03
	(0.44)	(0.57)	(0.46)	(0.54)	(0.49)	(0.28)	(0.46)	(0.32)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.03	0.04	0.02	0.03	0.06	0.07	0.05	0.06
	(0.30)	(0.44)	(0.29)	(0.42)	(0.41)	(0.16)	(0.39)	(0.19)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.41[a]	-0.41[a]	-0.39[a]	-0.40[a]	-0.31	-0.27[c]	-0.28[c]	-0.26[c]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.12)	(0.07)	(0.10)	(0.09)
INTERCEPT	0.21[a]	0.17	0.19[b]	0.18[c]	0.33[a]	0.22[c]	0.27[a]	0.22[b]
	(0.00)	(0.20)	(0.02)	(0.10)	(0.00)	(0.06)	(0.00)	(0.02)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1074	1069	1074	1069	1073	1071	1073	1071
R2	0.17	0.26	0.17	0.26	0.18	0.17	0.18	0.17
Fitted target: Mean	6.81	11.39	6.81	11.39	6.81	11.39	6.81	11.39
Maximum	23.22	33.70	23.67	33.73	23.22	33.70	23.67	33.73
Minimum	0.72	5.27	0.72	5.15	0.72	5.27	0.72	5.15
$\lambda + \theta + \lambda' + \theta'$	0.06	0.07	0.08	0.08	0.26	0.27	0.27	0.28
Wald test (p-value)	0.46	0.36	0.31	0.32	0.03	0.01	0.00	0.00

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\widehat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\widehat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A7. Fitted values of the first step estimation are obtained by estimating the target capital ratio using a perfect adjustment model (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta \widehat{BELOW}_{it-1} + \lambda' W_{it} + \theta' \widehat{BELOW}_{it-1} W_{it}) \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.41[a]	0.41[a]	0.42[a]	0.41[a]	0.44[a]	0.43[a]	0.44[a]	0.43[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.04	0.03	0.03	0.03	0.04	0.04	0.03	0.03
	(0.55)	(0.64)	(0.57)	(0.60)	(0.62)	(0.21)	(0.58)	(0.22)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.03	0.01	0.02	0.02	0.06	0.06	0.05	0.05
	(0.39)	(0.50)	(0.35)	(0.47)	(0.49)	(0.21)	(0.43)	(0.24)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.42[a]	-0.40[a]	-0.40[a]	-0.39[a]	-0.27	-0.25[c]	-0.24	-0.22[c]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.10)	(0.09)	(0.10)	(0.08)
INTERCEPT	0.16[c]	0.15[c]	0.17[c]	0.19[c]	0.23[a]	0.15[c]	0.25[a]	0.19[c]
	(0.10)	(0.09)	(0.05)	(0.06)	(0.00)	(0.10)	(0.00)	(0.09)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1125	1123	1125	1123	1123	1110	1123	1110
R2	0.13	0.22	0.13	0.22	0.09	0.13	0.09	0.13
Fitted target: Mean	6.80	11.38	6.80	11.39	6.80	11.38	6.80	11.39
Maximum	17.30	23.37	17.32	23.45	17.30	23.37	17.32	23.45
Minimum	0.33	3.16	0.37	3.17	0.33	3.16	0.37	3.17
$\lambda + \theta + \lambda' + \theta' = 0$	0.06	0.05	0.07	0.07	0.27	0.28	0.28	0.29
Wald test (p-value)	0.60	0.47	0.26	0.45	0.01	0.00	0.00	0.00

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\widehat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\widehat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A8. One-step procedure to estimate the impact of the wedge on capital adjustment speed (Two-step system GMM estimator)

Model:

$$\mathrm{ADE}_{it} = \mu_i + \lambda \sum_{j=1}^{J} \beta_j x_{jit} + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t - (\lambda + \theta \mathrm{BELOW}_{it-1} + \lambda' \mathrm{W}_{it} + \theta' \mathrm{BELOW}_{it-1} \mathrm{W}_{it}) \frac{\widetilde{\mathrm{K}}_{it-1}}{\mathrm{A}_{it}} + \epsilon_{it}$$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\frac{\widetilde{\mathrm{K}}_{it-1}}{\mathrm{A}_{it}}$ (λ)	-0.39[a]	-0.34[a]	-0.40[a]	-0.33[a]	-0.43[a]	-0.37[a]	-0.40[a]	-0.36[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\frac{\widetilde{\mathrm{K}}_{it-1}}{\mathrm{A}_{it}} \times \mathrm{BELOW}_{it-1}$ (θ)	0.07	0.09	0.10	0.09	0.10	0.11	0.10	0.11
	(0.35)	(0.67)	(0.29)	(0.63)	(0.24)	(0.43)	(0.21)	(0.40)
$\frac{\widetilde{\mathrm{K}}_{it-1}}{\mathrm{A}_{it}} \times \mathrm{W}_{it}$ (λ')	-0.06	-0.01	-0.11	-0.04	-0.06	-0.03	-0.13	-0.06
	(0.13)	(0.76)	(0.11)	(0.55)	(0.11)	(0.45)	(0.17)	(0.34)
$\frac{\widetilde{\mathrm{K}}_{it-1}}{\mathrm{A}_{it}} \times \mathrm{BELOW}_{it-1} \times \mathrm{W}_{it}$ (θ')	0.30[b]	0.18[a]	0.29[b]	0.19[a]	0.12[c]	0.03	0.15	0.03
	(0.03)	(0.01)	(0.04)	(0.01)	(0.10)	(0.43)	(0.20)	(0.33)
Number of observations	1127	1123	1127	1123	1125	1124	1125	1124
$\lambda + \theta + \lambda' + \theta'$	-0.08	-0.08	-0.12	-0.09	-	-	-	-
Wald test (p-value)	0.65	0.58	0.61	0.56	-	-	-	-
Hansen Test: Hansen stat	179.83	223.67	175.38	219.93	141.07	227.27	139.99	220.59
P-Value	0.18	0.22	0.13	0.27	0.11	0.17	0.13	0.26
AR2 test: AR2 stat	-0.79	-1.03	-0.78	-1.02	0.28	-0.41	0.25	-0.43
P-Value	0.42	0.30	0.44	0.30	0.77	0.68	0.75	0.66

Variables definition: $\mathrm{ADE}_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\widetilde{\mathrm{K}}_{it-1}}{\mathrm{A}_{it}}$, is the actual deviation. $\frac{\widetilde{\mathrm{K}}_{it-1}}{\mathrm{A}_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured as total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner.

In all regressions, we consider the same control variables as those in Table 6. We report only the variables of interest. Country and time fixed effects are also included but not reported. To deal with colinearity issues, we orthogonalize the same set of variables as in Table 6 (both COSTEQ and CV respectively with ROA and LnTA). P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A9. Impact of the wedge on capital adjustment speed (Two-step system GMM estimator)

Model: $ADE_{it} = (\lambda + \theta\ \widehat{BELOW}_{it-1} + \lambda'\ W_{it} + \theta'\ \widehat{BELOW}_{it-1}\ W_{it})\ \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.44[a]	0.41[a]	0.43[a]	0.39[a]	0.45[a]	0.44[a]	0.45[a]	0.45[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.04	0.05	0.03	0.03	0.06	0.04	0.06	0.03
	(0.77)	(0.59)	(0.69)	(0.62)	(0.46)	(0.15)	(0.43)	(0.18)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.05	-0.02	0.03	-0.01	0.07	0.06	0.05	0.05
	(0.66)	(0.73)	(0.70)	(0.69)	(0.31)	(0.11)	(0.36)	(0.13)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.46[a]	-0.38[a]	-0.43[a]	-0.36[a]	-0.29[c]	-0.25[c]	-0.28[c]	-0.26[c]
	(0.03)	(0.02)	(0.00)	(0.00)	(0.07)	(0.06)	(0.10)	(0.09)
INTERCEPT	0.09	0.10	0.07[c]	0.11	0.30[a]	0.42[a]	0.31[a]	0.34[a]
	(0.15)	(0.28)	(0.10)	(0.25)	(0.00)	(0.00)	(0.00)	(0.00)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1120	1115	1120	1115	1119	1117	1119	1117
Fitted target: Mean	6.70	11.22	6.71	11.23	6.70	11.22	6.71	11.23
Maximum	21.94	33.45	23.12	33.57	21.94	33.45	23.12	33.57
Minimum	0.67	3.51	0.68	3.43	0.67	3.51	0.68	3.43
$\lambda + \theta + \lambda' + \theta'$	0.07	0.06	0.06	0.05	0.29	0.29	0.28	0.27
Wald test (p-value)	0.36	0.53	0.38	0.59	0.00	0.00	0.00	0.00
Hansen test: Hansen stat	112.13	111.83	63.08	56.91	57.72	60.04	55.05	72.49
P-value	0.13	0.13	0.14	0.30	0.27	0.21	0.36	0.32
AR2 test: AR2 stat	1.20	-1.15	0.77	-0.78	0.98	-0.16	0.80	-0.81
P-value	0.23	0.25	0.44	0.44	0.33	0.87	0.43	0.41

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)^{*}_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)^{*}_{it}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A10. Impact of the wedge on capital adjustment speed: excluding widely-held banks (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta\, \widehat{BELOW}_{it-1} + \lambda'\, W_{it} + \theta'\, \widehat{BELOW}_{it-1}\, W_{it})\, \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.41[a]	0.43[a]	0.42[a]	0.41[a]	0.45[a]	0.44[a]	0.43[a]	0.42[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.04
	(0.45)	(0.62)	(0.53)	(0.57)	(0.40)	(0.35)	(0.22)	(0.58)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.05	0.04	0.00	0.03	0.05	0.10	0.07	0.07
	(0.37)	(0.50)	(0.90)	(0.36)	(0.48)	(0.15)	(0.49)	(0.32)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.43[a]	-0.43[a]	-0.37[b]	-0.39[a]	-0.29[c]	-0.29[c]	-0.22[c]	-0.25[c]
	(0.00)	(0.00)	(0.02)	(0.00)	(0.09)	(0.07)	(0.06)	(0.09)
INTERCEPT	0.13[b]	0.16[c]	0.17[a]	0.19[b]	0.32[a]	0.38[a]	0.32[a]	0.24
	(0.02)	(0.06)	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)	(0.13)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	916	910	916	910	915	912	915	912
R2	0.18	0.24	0.18	0.24	0.18	0.16	0.18	0.20
Fitted target: Mean	6.45	11.37	6.45	11.37	6.70	11.22	6.45	11.37
Maximum	22.66	30.67	22.94	30.66	21.94	33.45	22.94	30.66
Minimum	0.50	3.29	0.41	3.29	6.70	3.51	0.41	3.29
$\lambda + \theta + \lambda' + \theta'$	0.05	0.05	0.07	0.08	0.24	0.27	0.30	0.28
Wald test (p-value)	0.57	0.39	0.46	0.34	0.03	0.00	0.00	0.01

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable (W_{it}) that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A11. Impact of the wedge on capital adjustment speed: excluding banks controlled by more than one largest shareholder (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta\, \widehat{BELOW}_{it-1} + \lambda'\, W_{it} + \theta' \widehat{BELOW}_{it-1}\, W_{it})\, \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.40[a]	0.40[a]	0.40[a]	0.39[a]	0.45[a]	0.41[a]	0.44[a]	0.42[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.05	0.03	0.04	0.04	0.04	0.03	0.04	0.03
	(0.72)	(0.34)	(0.76)	(0.32)	(0.18)	(0.32)	(0.18)	(0.33)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.02	0.01	0.02	0.02	0.02	0.04	0.03	0.05
	(0.56)	(0.45)	(0.55)	(0.47)	(0.39)	(0.41)	(0.41)	(0.42)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.39[b]	-0.38[a]	-0.37[a]	-0.38[a]	-0.21	-0.20[c]	-0.20[c]	-0.21[c]
	(0.02)	(0.00)	(0.00)	(0.00)	(0.10)	(0.08)	(0.10)	(0.09)
INTERCEPT	0.12[b]	0.11	0.09[c]	0.09	0.21[a]	0.28[a]	0.20[a]	0.30[a]
	(0.04)	(0.30)	(0.08)	(0.25)	(0.00)	(0.00)	(0.00)	(0.00)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	648	645	645	645	647	646	647	646
R2	0.15	0.27	0.27	0.27	0.18	0.19	0.18	0.19
Fitted target: Mean	6.42	11.26	11.25	11.25	6.42	11.26	6.42	11.25
Maximum	23.11	29.57	29.61	29.61	23.11	29.57	23.19	29.61
Minimum	0.83	2.63	2.61	2.61	0.83	2.63	0.88	2.61
$\lambda + \theta + \lambda' + \theta'$	0.08	0.06	0.09	0.07	0.30	0.28	0.31	0.29
Wald test (p-value)	0.48	0.71	0.37	0.68	0.00	0.00	0.00	0.00

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A12. Impact of the wedge on capital adjustment speed: alternative control classification of ultimate owners (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta\, \widehat{BELOW}_{it-1} + \lambda'\, W_{it} + \theta' \widehat{BELOW}_{it-1}\, W_{it})\, \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.41[a]	0.40[a]	0.42[a]	0.41[a]	0.44[a]	0.42[a]	0.42[a]	0.42[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.02	0.02	0.01	0.02	0.02	0.01	0.03	0.02
	(0.45)	(0.34)	(0.45)	(0.31)	(0.28)	(0.43)	(0.31)	(0.40)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.05	0.04	0.04	0.03	0.07	0.11	0.08	0.09
	(0.49)	(0.22)	(0.52)	(0.25)	(0.36)	(0.28)	(0.39)	(0.31)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.40[a]	-0.37[a]	-0.40[a]	-0.38[a]	-0.25[c]	-0.28	-0.24[c]	-0.26[c]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.08)	(0.10)	(0.06)	(0.09)
INTERCEPT	0.15[b]	0.12[c]	0.14[a]	0.08	0.26[a]	0.43[a]	0.27[a]	0.42[a]
	(0.04)	(0.09)	(0.00)	(0.14)	(0.00)	(0.00)	(0.00)	(0.00)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1124	1119	1124	1119	1123	1121	1123	1121
R2	0.17	0.25	0.17	0.25	0.17	0.16	0.17	0.16
Fitted target: Mean	6.45	11.37	6.71	11.23	6.70	11.22	6.71	11.23
Maximum	22.66	30.67	22.90	33.32	21.94	33.45	22.90	33.32
Minimum	0.50	3.29	0.83	3.43	6.70	3.51	0.83	3.43
$\lambda + \theta + \lambda' + \theta'$	0.08	0.09	0.07	0.08	0.28	0.26	0.29	0.27
Wald test (p-value)	0.47	0.56	0.57	0.45	0.00	0.00	0.00	0.00

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)^{*}_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)^{*}_{it}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.

Table A13. Impact of the wedge on capital adjustment speed: control threshold of 20% (GLS estimation with RS Errors)

Model: $ADE_{it} = (\lambda + \theta\, \widehat{BELOW}_{it-1} + \lambda'\, W_{it} + \theta'\, \widehat{BELOW}_{it-1}\, W_{it})\, \widehat{TDE}_{it} + \mu_i + \sum_{c=2}^{17} \alpha_c \delta_c + \sum_{t=2}^{8} \varphi_t \tau_t + \epsilon_{it}$

Dependent variable	ADE_{it}							
	External change in capital				External and internal changes in capital			
	Baseline		Wedge differentiated target		Baseline		Wedge differentiated target	
	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA	T1TA	T1RWA
$\widehat{TDE}_{it}$ (λ)	0.41[a]	0.40[a]	0.41[a]	0.39[a]	0.45[a]	0.43[a]	0.45[a]	0.42[a]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1}$ (θ)	0.01	0.02	0.01	0.02	0.04	0.02	0.03	0.02
	(0.39)	(0.36)	(0.42)	(0.33)	(0.52)	(0.20)	(0.50)	(0.24)
$\widehat{TDE}_{it} \times W_{it}$ (λ')	0.03	0.04	0.03	0.03	0.05	0.04	0.04	0.03
	(0.31)	(0.33)	(0.35)	(0.35)	(0.63)	(0.68)	(0.61)	(0.63)
$\widehat{TDE}_{it} \times \widehat{BELOW}_{it-1} \times W_{it}$ (θ')	-0.39[a]	-0.40[a]	-0.38[a]	-0.38[a]	-0.27[c]	-0.22	-0.26[c]	-0.20[c]
	(0.00)	(0.00)	(0.00)	(0.00)	(0.08)	(0.16)	(0.09)	(0.09)
INTERCEPT	0.10[c]	0.27[a]	0.12[b]	0.24[b]	0.32[a]	0.31[a]	0.32[a]	0.34[a]
	(0.08)	(0.00)	(0.03)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1243	1238	1243	1238	1242	1240	1242	1240
R2	0.18	0.27	0.18	0.26	0.17	0.19	0.18	0.20
Fitted target: Mean	6.68	11.34	6.69	11.35	6.68	11.34	6.69	11.35
Maximum	22.43	32.65	24.09	33.53	22.43	32.65	24.09	33.53
Minimum	0.56	3.39	0.58	3.32	0.56	3.39	0.58	3.32
$\lambda + \theta + \lambda' + \theta'$	0.06	0.06	0.07	0.06	0.27	0.27	0.26	0.27
Wald test (p-value)	0.41	0.36	0.43	0.43	0.00	0.00	0.00	0.00

Variables definition: $ADE_{it} = \left(\frac{K}{A}\right)_{it} - \frac{\tilde{K}_{it-1}}{A_{it}}$, is the actual deviation. $\widehat{TDE}_{it} = \left(\frac{\hat{K}}{A}\right)_{it}^{*} - \frac{\tilde{K}_{it-1}}{A_{it}}$ is the fitted target deviation. $\left(\frac{\hat{K}}{A}\right)_{it}^{*}$ is the fitted target capital ratio defined respectively as the non-weighted Tier 1 capital ratio (T1TA) and risk-based Tier 1 capital ratio (T1RWA). $\frac{\tilde{K}_{it-1}}{A_{it}}$ is defined as the sum of the lagged value of Tier 1 regulatory capital and the current net income minus the current dividend payment when we only considered external change in capital and as the lagged value of Tier 1 regulatory capital when we consider both external and internal changes in capital, divided by A_{it} measured by total assets in columns T1TA and risk-weighted assets in columns T1RWA. In the baseline and the wedge differentiated target columns, we respectively estimate the target capital ratio without and with a dummy variable W_{it} that captures the divergence between voting and cash-flow rights of the largest ultimate owner. $\widehat{BELOW}_{it-1}$ is a dummy variable equal to one if the bank capital ratio is below the target at t-1, and zero otherwise. P-values are shown in parentheses. a, b and c indicate significance respectively at the 1%, 5% and 10% levels.